INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad -500 043

MASTER OF BUSINESS ADMINISTRATION

COURSE DESCRIPTOR

Course Title	STATISTICS FOR MANAGEMENT				
Course Code	CMBB05				
Programme	MBA				
Semester	I				
Course Type	CORE				
Regulation	IARE-R18				
Course Structure	**Theory**			**Practical**	
	Lectures	**Tutorials**	**Credits**	**Laboratory**	**Credits**
	4	-	4	-	-
Chief Coordinator	Ms. G Joseph Mary, Assistant Professor				
Course Faculty	Ms. G Joseph Mary, Assistant Professor				

I.   COURSE OVERVIEW:

This course helps to improve their ability to make effective marketing decisions, including assessing marketing opportunities and developing marketing strategies and implementation plans, which provide with the relevant mathematical tools required in the analysis of problems in engineering and scientific professions. The course includes strategic planning, marketing research and information systems, buyer behavior, target market selection random variables, probability distributions, correlation, regression, sampling distribution, testing of hypothesis and analysis of variance. The mathematical skills derived from this course form a necessary base to analytical and design concepts encountered in the program.

II.   COURSE PRE-REQUISITES:

Level	Course Code	Semester	Prerequisites
-	-	-	-

III. MARKS DISTRIBUTION:

Subject	SEE Examination	CIA Examination	Total Marks
Statistics For Management	70 Marks	30 Marks	100

IV. DELIVERY / INSTRUCTIONAL METHODOLOGIES:

✘	Chalk & Talk	✔	Quiz	✔	Assignments	✘	MOOCs
✔	LCD / PPT	✔	Seminars	✘	Mini Project	✔	Videos
✘	Open Ended Experiments						

V. EVALUATION METHODOLOGY:

The course will be evaluated for a total of 100 marks, with 30 marks for Continuous Internal Assessment (CIA) and 70 marks for Semester End Examination (SEE). Out of 30 marks allotted for CIA during the semester, marks are awarded by taking average of two CIA examinations or the marks scored in the make-up examination.

Semester End Examination (SEE): The SEE is conducted for 70 marks of 3 hours duration. The syllabus for the theory courses is divided into five units and each unit carries equal weightage in terms of marks distribution. The question paper pattern is as follows. Two full questions with "either" or "choice" will be drawn from each unit. Each question carries 14 marks. There could be a maximum of two sub divisions in a question.

The emphasis on the questions is broadly based on the following criteria:

50 %	To test the objectiveness of the concept.
50 %	To test the analytical skill of the concept OR to test the application skill of the concept.

Continuous Internal Assessment (CIA):
CIA is conducted for a total of 30 marks (Table 1), with 25 marks for Continuous Internal Examination (CIE), 05 marks for Quiz/ Alternative Assessment Tool (AAT).

Table 1: Assessment pattern for CIA

Component	Theory		Total Marks
Type of Assessment	CIE Exam	Quiz / AAT	
CIA Marks	25	05	30

Continuous Internal Examination (CIE):

Two CIE exams shall be conducted at the end of the 8th and 16th week of the semester respectively. The CIE exam is conducted for 25 marks of 2 hours duration consisting of two parts. Part–A shall have five compulsory questions of one mark each. In part–B, four out of five questions have to be answered where, each question carries 5 marks. Marks are awarded by taking average of marks scored in two CIE exams.

Alternative Assessment Tool (AAT):

Marks shall be awarded considering the average of two assignments for every course. The AAT may include seminars, assignments, term paper, open ended experiments, five minutes video.

VI. HOW PROGRAM OUTCOMES ARE ASSESSED:

	Program Outcomes (POs)	Strength	Proficiency assessed by
PO 1	**Managerial Skills**: Apply knowledge of management theories and practices to solve business problems.	2	Seminar
PO 2	**Decision making Skills**: Foster analytical and critical thinking abilities for data-based decision making.	3	Assignments
PO 4	**Communication skills**: Ability to understand, analyze and communicate global, economic, legal, and ethical aspects of business.	2	Assignments
PO 6	**Entrepreneurial and Innovation Skills**: Demonstrate the skills in evaluating business opportunity and identifying sources of potential funding, and develop as successful entrepreneurs	3	Seminar

3 = High; 2 = Medium; 1 = Low

VII. COURSE OBJECTIVES:

The course should enable the students to:	
I	Addresses the management challenge of designing and implementing the best combination of marketing actions to carry out a firm's strategy in its target markets.
II	Applying the analytic perspectives, decision tools, and concepts of marketing to decisions involving segmentation, targeting and positioning, product offering.
III	Identify and demonstrate the dynamic nature of the environment in which marketing decisions are taken and appreciate the implications for marketing strategy determination and implementation.
IV	Analyze the relevance of marketing concepts and theories in evaluating the impacts of environmental changes on marketing planning, strategies and practices.

VIII. COURSE OUTCOMES (COs):

CO Code	CO's	At the end of the course, the student will have the ability to:	PO's Mapped	Strength of Mapping
CMBB05.01	CO 1	Recognize the significance, limitations, origin and development of statistics.	PO 1	2
CMBB05.02	CO 2	Acquire the knowledge about different managerial applications of statistics in various fields in modern times and analyze the use of computers in statistics.	PO 1	2
CMBB05.03	CO 3	Discuss various types of measures of central tendency and measures of dispersion..	PO 2	3
CMBB05.04	CO 4	Analyze the different types of coefficient of skewness and the coefficient of variation.	PO 4	2
CMBB05.05	CO 5	Understand the tabulation and classification of data to draw effective solutions for solving problems.	PO 4	2
CMBB05.06	CO 6	Demonstrate the diagrammatical and graphical representation of data by using different dimensional diagrams.	PO 6	3
CMBB05.07	CO 7	Examine the differences between uni-variate , bi variate and multi variate data.	PO 6	3
CMBB05.08	CO 8	Apply different types of small sample tests and techniques of ANOVA..	PO 6	3
CMBB05.09	CO 9	Analyze correlation analysis and different types of coefficient of correlation.	PO 6	3
CMBB05.10	CO 10	Describe the regression analysis, time series analysis and trend analysis of data..	PO 6	3

3 = High; 2 = Medium; 1 = Low

IX. MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES:

(COs)	Program Outcomes (POs)							
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	2							
CO 2	2							
CO 3		3						
CO 4				2				
CO 5				2				
CO 6						3		
CO 7						3		
CO 8						3		
CO 9						3		
CO 10						3		

3 = High; 2 = Medium; 1 = Low

X. ASSESSMENT METHODOLOGIES–DIRECT

CIE Exams	PO1, PO2, PO4, PO6	SEE Exams	PO1, PO2, PO4, PO6	Assignments	PO2	Seminars	PO1, PO6
Laboratory Practices	-	Student Viva	-	Mini Project	-	Certification	-
Term Paper	-						

XI. ASSESSMENT METHODOLOGIES-INDIRECT

✔	Early Semester Feedback	✔	End Semester OBE Feedback
✘	Assessment of Mini Projects by Experts		

XII. SYLLABUS

UNIT-I	INTRODUCTION TO STATISTICS	Classes:08
Overview, origin and development and managerial applications of statistics and branches of the study, statistics and computers, limitations of statistics.		

UNIT -II	MEASURES OF CENTRAL TENDENCY	Classes:09
Mean, median, mode, geometric mean and harmonic mean, dispersion, range ,quartile deviation, mean deviation; co-efficient of variation skewness: Karl pearson co-efficient of skewness, bowleys co-efficient of skewness, kelleys co-efficient of skewness; theory and problems, discussion on direct and indirect methods of solving the problems..		

UNIT -III	TABULATION OF UNIVARIATE	Classes:08
Bivariate and multivariate data, data classification and tabulation, diagrammatic and graphical representation of data. One dimensional, two dimensional and three-dimensional diagrams and graphs.		

UNIT -IV	SMALL SAMPLE TESTS	Classes:10
T-Distribution: properties and applications, testing for one and two means, paired t-test; analysis of variance: 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 analysis: scatter diagram, positive and negative correlation, limits for coefficient of correlation, Karl Pearson's coefficient of correlation, spearman"s rank correlation, concept of multiple and partial correlation.		

UNIT -V	REGRESSION ANALYSIS	Classes:10
Concept, least square fit of a linear regression, two lines of regression, properties of regression coefficients; Time Series Analysis: Components, models of time series additive, multiplicative and mixed models; Trend analysis: Free hand curve, semi averages, moving averages, least square methods; Index numbers: introduction, characteristics and uses of index numbers, types of index numbers, un weighted price indices, weighted price indices, tests of adequacy and consumer price indexes.		

Text Books:
1. Levin R.I., Rubin S. David, "Statistics for Management", 2015, 7th Ed. Pearson.   2. Beri, "Business Statistics", 2015, 1st Ed, TMH.   3. Gupta S.C, "Fundamentals of Statistics", 2015, 6th Ed. HPH.
Reference Books:
1. Levine, Stephan ,krehbiel , Berenson, "Statistics for Managers using Microsoft Excel",PHI.   2. J. K Sharma, "Business Statistics", 2nd Ed. Pearson, 2015.

XIII. COURSE PLAN:

The course plan is meant as a guideline. Probably there may be changes.

Lecture No	Topics to be covered	Course Outcomes (COs)	Reference
1-2	Overview, origin and development	CO 1	T1:22.5
3-4	managerial applications of statistics, branches of the study	CO 2	T1:22.5 R1:2.4
5-6	statistics with computers, limitations of statistics	CO 2	T2:22.6
7-9	Mean, median, mode, geometric mean and harmonic mean	CO 3	T1:22.7 R1:4.4
10-12	Dispersion, range ,quartile deviation, mean deviation	CO 3	T1:22.7 R1:4.10
13-15	co-efficient of variation skewness: Karl pearson co-efficient of skewness, bowleys co-efficient of skewness	CO 4	T2:22.8 R1:4.15
16-18	kelleys co-efficient of skewness; theory and problems, discussion on direct and indirect methods of solving the problems	CO 4	T1:22.9 R1:5.4
19-20	Bi variate and multi variate data, data classification and tabulation, diagrammatic and graphical representation of data.	CO 6	T2:22.9 R1:5.8
21	One dimensional, two dimensional and three dimensional diagrams and graphs	CO 7	T2:23.10 R2:7.5
22-24	T-Distribution: properties and applications, testing for one and two means, paired t-test; analysis of variance:	CO 8	T1:23.10 R1:6.8
25-28	one way and two way ANOVA(with and without interaction),chi-square distribution: test for a specified population variance	CO 8	T2:23.10 R1:6.13
29-31	Test for goodness of fit, test for independence of attributes; correlation analysis: scatter diagram, positive and negative correlation, limits for coefficient of correlation, KarlPearson's coefficient of correlation.	CO 8	T2:23.9 R1:7.5
32-34	spearman's rank correlation, concept of multiple and partial correlation	CO 9	T1:23.10 R1:7.5
35-37	Concept, least square fit of a linear regression, two lines of regression, properties of regression coefficients	CO9	T1:23.10 R1:8.1
38-40	Time Series Analysis: Components, models of time series additive, multiplicative and mixed models; Trend analysis	CO9	T2:23.1 R1:9.2
41	Free hand curve, semi averages, moving averages, least square methods; Index numbers	CO10	T1:23.1 R2:9.4
42	characteristics and uses of index numbers, types of index numbers, un weighted price indices,weighted price indices	CO10	T1:23.1 R1:9.9
43	Tests of adequacy and consumer price indexes.	CO10	T1:23.1 R1:9.10

XIV. GAPS IN THE SYLLABUS - TO MEET INDUSTRY / PROFESSION REQUIREMENTS:

S No	Description	Proposed Actions	Relevance with POs
1	To improve standards and analyze the concepts.	Seminars	PO 1
2	Conditional probability, Sampling distribution, correlation, regression analysis and testing of hypothesis	Seminars	PO 4
3	Encourage students to solve real time applications and prepare towards competitive examinations.	Assignments	PO 2

Prepared By:
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