DM 21305: Business Statistics for Decision Making –II (BSD-II) (Term II: Batch 2020-22)

Calcutta Business School

Post Graduate Diploma in Management Program (PGDM)

Course Title: **Business Statistics for Decision Making –II (BSD-II) (Course Code :** DM 21305)
Course Instructor: **Dr. Suman Kumar Dawn**
Designation: Professor and Chairperson-PGDM Programme Contact
Details: Office: 033-2420-5210
E-mail: chairpgdm@calcuttabusinessschool.org

COURSE INFORMATION:

Course Description. The fundamentals of managerial statistics are presented. Topics include statistics hypothesis and chi square test
.
This purpose of this course is to provide students with statistical tools needed by managers. The course emphasizes understanding the process associated with statistical decisions, defining and formulating problems, analyzing the data, and using the results in decision making.

Course Objectives:
Students will be able to demonstrate understanding of statistical thinking and data analysis techniques for decision-making under uncertainty. Students will be able to apply statistical techniques to data sets, and correctly interpret the results. Students will be able to analyze and apply computer-generated statistical output to solve problems.

The objective of this course is to provide an understanding for the graduate business student on statistical concepts to probability distributions, sampling, estimation, hypothesis testing. By completing this course the student will learn to perform the following:

1)   Perform Test of Hypothesis as well as calculate confidence interval for a population parameter for single sample and two sample cases. Understand the concept of p-values.
2)   Learn non-parametric test such as the Chi-Square test for Independence as well as Goodness of Fit.
3) Perform ANOVA and F-test.

The proposed syllabus of DM 21305has been designed to enable the students to understand the statistical hypothesis and chi-square testing Emphasis is given on building logic-based understanding for solving such problems using tools of Statistics.
.

Learning Outcomes

Category	Learning outcomes – Conceptual	Learning Outcomes - Observable
Essential Ingredients of hypothesis testing	Understand hypothesis testing as making an argument; Significance level as the probability of rejecting a true null hypothesis; Understand that p-value is the probability of obtaining the data if the null hypothesis were true.	Given a research question, formulate null and alternative hypotheses; Explain the meaning of significance level in context; Explain the meaning of p-value in context; Know the formula for the test statistic (z) and calculate it by hand.
Hypothesis testing in four steps	Understand the logic and framework of the inference of hypothesis testing.	Verify the conditions for a hypothesis test; Given a research question, conduct a hypothesis test for a population proportion; Make a decision using p-value and draw an appropriate conclusion; Relate a "Type I" error and level of significance for a hypothesis test when making a decision; Recognize areas on the standard normal curve that could represent a p-value.
Hypothesis tests in detail	Statistical vs practical significance; What to do if conditions fail; Types of errors; Inappropriate conclusions and manipulations during hypothesis testing.	Relate Type I error and statistical significance; Use appropriate language when interpreting the results of a hypothesis test; Interpret statistical and practical significance; Interpret a Type I error and a Type II error in context; Be able to compare relative sizes of the test-statistic and p-value. For example, answer such questions as, "If the z-statistic is close to 0, would the p-value be large or small? Detect flaws in a faulty hypothesis test (e.g. inappropriate conclusions or changing the hypotheses to fit the data); Choose the better inference technique, a confidence interval or hypothesis test, given a research question

Session Plan- Business Statistics for Decision Making –II (BSD-II)

Unit	Module	No. of Lecture Session (each of 1.5 hours duration)	Methodology / Instructional techniques	Evaluation/ learning confirmation
1	Formation of null and alternative hypothesis,	1	Lecture and illustration	Discussion and Practical
2	level of significance, type I and type II errors	2	Lecture and illustration	Discussion and
3	hypothesis – T-test, Z-test Test for single mean and difference between two means only	3	Lecture and illustration	Practical
4	Chi-square test (simple problems).	2	Lecture and illustration	Discussion and
5	ANOVA testing	2	Lecture and illustration	Practical
Total	-------------------------------	10		

Pedagogy:
The course is dependent exclusively on a balanced appraisal of students done on the basis of the following methods:
● Students' active participation in class lectures and regular assignments
  (given in class as well as take-home)
● Performance in the Mid-term test
● Performance in the End-term test
● Group Project works and presentation/viva-voce

Evaluation Scheme:
Emphasis will be given on continuous evaluation of the students. The overall grade in the course will be determined by performance on the following components:

Serial No.	Particulars	Marks
1	Class participation & Attendance	10
2	Mid-term Test	20

3	Quiz	10
3	Project/Assignment	20
4	End-term Test	40
	Total	100

Text Books:

● Schaum's Outlines of Business Statistics, 4th Edition, Leonard J.Kazmier, Mcgraw Hill
● Statistics for Management, 7th Edition, Richard I. Levin, David S. Rubin, Sanjay Rastogi, and Masood Hussain Siddiqui, Pearson.
● Business Statistics, 5th Edition A.P. Verma, Asia Books Private Limited

Reference Books:

● Fundamentals of Statistics ,Volume I, A.M Gun, M.K. Gupta, B. Dasgupta, The World Press Private Limited, Kolkata
● Fundamentals of Statistics ,Volume II, A.M Gun, M.K. Gupta, B. Dasgupta, The World Press Private Limited, Kolkata
● Statistical Methods, Volumes I & II, N. G. Das Tata Mcgraw Hill, New Delhi
● Statistics for Business and Economics RP Hooda , Macmillan Business Books
● C.B.Gupta: Statistics, Himalaya Publications.
● Chikkodi & B.G.Satya Prasad: Business Statistics, Himalaya Publications.

>>>