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**KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY (KIIT)**

**(**Deemed to be University)

**DEPARTMENT OF MATHEMATICS**

**SCHOOL OF APPLIED SCIENCES**

SPRING SEMESTER 2023-24

**Date wise Lesson Plan**

**Section - CSSE**

**Date: 08/01/2023**

**Code:MA 2011 Subject: Probability and Statistics Cr-3**

**Course Outcome:** At the end of the course, the students will be able to :

CO1. understand the concept of probability and related terms,

conditional probability and independent events.

CO2. get the idea of random variable and different discrete probability distribution.

CO3. know the concepts of continuous probability distribution,

joint probability distribution of random variables and expected values.

CO4. solve problems related to co-variance and co-relation

and know the methods of point estimation.

CO5. understand the concept of sampling, statistical intervals , confidence interval

for population mean and normal population distribution.

CO6. z-test, test hypothesis based on single sample and deduce inferences based on two

samples.

**Prerequisite** : **MA1003, MA1004**

**Unit - I**

**(Overview and Descriptive Statistics; Probability; Discrete random variables and Probability Distributions)**

Descriptive Statistics, Probability, Sample spaces, Events, Properties of Probability, Conditional Probability, Independent events.

Random variables, Probability distribution of discrete random variable, Binomial Probability distribution, Hyper geometric and Negative binomial Probability distribution, Poisson Probability distribution.

**Unit - II**

**(Continuous random variables and Probability distributions; Joint random variables and random samples; Point estimation )**

Probability distribution of continuous random variable, Other continuous Probability distributions. Jointly distributed random variables, Expected values, Co-variance and Co-relation. Distribution of sample mean. Point estimation, Methods of Point estimation.

**Unit - III**

**(Statistical intervals based on a single sample; Tests of hypothesis based on a single sample; Inference based on two samples )**

Statistical intervals based on a single sample: properties of confidence intervals, Large sample confidence intervals for population mean and proportions. Intervals based on normal population distribution. z-test, Tests of hypothesis based on a single sample. Inferences based on two samples.

**Text books**

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| **T1.** | Probability and Statistics for Engineers and Sciences by J. L. Devore, CENGAGE Learning, 8th Edn |
| **T2.** | Advanced Engineering Mathematics by Erwin Kreyszig, Wiley, INC, 10th Edition |

**Reference Books:**

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| **R1.** | Introduction to Probability and Statistics by William Mendenhall, Robert J, Beaver and Barbara M. Beaver, CENGAGE Learning |
| **R2.** | Fundamentals of Probability and Statistics for Engineers, T. T. Moong, John Wiley and Sons, USA |
| **R3.** | Probability and Statistics in Engineering by W.W. Hines, D.C. Montgomery, D.M. Goldsman, C.M. Borror |
| **R4.** | Introduction to Probability and Statistics for Engineers and Scientists by S.M. Ross |
| **R5.** | Introduction to Probability and Statistics by J.S. Milton & J.C. Arnold |
| **R6.** | Introduction to Probability Theory and Statistical Inference by H.J. Larson |
| **R7.** | Probability and Statistics for Engineers and Scientists by R.E. Walpole, R.H. Myers, S.L. Myers, Keying Ye |
| **R8.** | An Introduction to Probability and Statistics by V.K. Rohatgi & A.K. Md. E. Saleh Modern Mathematical Statistics by E.J. Dudewicz & S.N. Mishra |
| **R9.** | Introduction to the Theory of Statistics by A.M. Mood, F.A. Graybill and D.C. Boes |