IV Semister

PDA COLLEGE OF ENGINEERING,KALABURAGI

B E. Fourth Semester

Applied statistics

(Branches: CSE & CSD)
[As per Choice Based Credit System (CBCS) scheme]
(From the academic year 2022-23)

Course Code	21MA41D	CIE Marks	50
Credits	03	SEE Marks	50
Contact Hours/Week (L-T-P)	3-0-0	Total Marks	100
Contact Hours	42	Exam Hours	03

Course Learning Objectives: To enable the students to obtain the knowledge of Engineering Mathematics in the following topics

1.Probability distribution of discrete and continuous random variables
2.Joint probability distributions and discrete and continuous random variables and Morkov's chains
3.Analyse the sample data using Large sample test, t-distribution and chi- distribution

Module-I — 8 hours

Probability distributions:

Random variable (Discrete and continuous) p.d.f., c.d.f., Binomial distribution, Poisson distributions, Normal distribution and problems.

RBT Levels: L1, L2 & L3

Module-II — 9 hours

Joint probability distributions:

Concept of joint probability distribution, discrete and continuous random variables independent random variables .problems on expectation and variance

RBT Levels: L1, L2 & L3

Module –III — 8 hours

Markov chains:

Introduction to probability vectors**,** stochastic matrices, higher transition probability. Stationary distribution of regular Markov chains and absorbing states

RBT Levels: L1, L2 & L3

Module –IV **9 hours**

Sampling theory -I

Sampling, sampling distribution, standard error, null and alternative hypothesis, Type-I and Type-II errors, Confidence limits. Test of significance for Large sample: Test for single proportion, difference of proportions, single mean, difference of means, and difference of standard deviations

RBT Levels: L1, L2 & L3

Module-V **8 hours**

Sampling theory -II

Test of significance Small samples student's t-distribution: Test for single mean, difference of means, test for ratio of variances - Chi-square test for goodness of fit and independence of attributes and applications to real world situations.

Distances in Classification:

Introduction, Euclidean Distance, Manhattan Distance, Euclidean vs Manhattan Distance, Chebyshev Distance, Hamming Distance, Distance calculation in Clusters .

RBT Levels: L1, L2 & L3

Text books:

1 Higher Engineering Mathematics by B.S.Grewal, 36th Edn.
2 Engineering Mathematics by N. P. Bali and Manish Goyal. Laxmi publications, latest edition.
3 Higher Engineering Mathematics by H. K. Dass and Er. Rajnish Verma. S. Chand publishing 1st edition -2011
4 Statistical Methods
Authored By Gupta S.P.Publisher: Sultan Chand & Sons. Publishing Year: 2021
5 Fundamentals of Mathematical Statistics Authored By Gupta S.C.& Kapoor V.K. Publisher:Sultan Chand & Sons.Publishing Year: 2020

Reference books:

1. Advanced Engineering Mathematics by E. Kreyszig, John Willey & sons 8th Edn.
2. Advanced Engineering Mathematics by R.K.Jain & S.R.K Iyengar; Narosa publishing House.

E-Books and Online resources:

- http://.ac.in/courses.php?disciplineID=111
- http://www.class-central.com/subject/math(MOOCs)
- http://academicearth.org/

Pedagogy (General Instructions):

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

1. In addition to the traditional lecture method, different types of innovative teaching methods may be adopted so that the delivered lessons shall develop student's theoretical and applied mathematical skills.
2. State the need for Mathematics with Engineering Studies and Provide real-life examples
3. Support and guide the students for self–study.
4. You will also be responsible for assigning homework, grading assignments and quizzes, and documenting students' progress.
5. Encourage the students for group learning to improve their creative and analytical skills.
6. Show short related video lectures in the following ways:
   - As an introduction to new topics (pre-lecture activity).
   - As a revision of topics (post-lecture activity).
   - As additional examples (post-lecture activity).
   - As an additional material of challenging topics (pre-and post-lecture activity).
   - As a model solution of some exercises (post-lecture activity).

COURSE OUTCOMES:

CO1: Solve problems using theoretical probability distributions
CO2: Apply the concepts of joint probability, to find covariance, correlation, independent variables
CO3: Apply stochastic to find the probability vectors, stochastic matrices and higher transition probability
CO4: Analyze the sample data using Large sample tests
CO5: Analyze the sample data using t-distribution and chi- distribution. Understand the different distance functions and its properties.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1										1
CO2	3	1										1
CO3	3	1										1
CO4	3	1										1
CO5	3	1										1
AVG	3	1										1

Method of Examination:

Note:- The SEE question paper will be set for 100 marks and the marks scored by the student will be proportionately reduced to 50.

- The question paper will have **ten** full questions carrying equal marks.
- Each full question carries **20**marks.
- There will be **two** full questions (with a **maximum** of **four** sub questions) from each module.
- Each full question will have sub question covering all the topics under a module.

The students will have to answer **five** full questions, selecting **one** full question from each module.