III Semister

PDA COLLEGE OF ENGINEERING,KALABURAGI
B E. Third Semester

Engineering Mathematics for Civil Engineering Stream-III
[As per Choice Based Credit System (CBCS) scheme]
(From the academic year 2022-23)

Course Code	22MATC31	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. Fourier Series and its application in engineering fields
2. Probability distribution of discrete and continuous random variables
3. Analyze the sample data using Large sample test, t-distribution and chi- distribution

Module-I **9hours**

Statistical methods:

Curve fitting by the method of least squares: Straight line, second degree parabola and the curves of the form $y = ab^x$, $y = ax^b$ *and* $y = ae^{bx}$.
Correlation and lines of regression, angle between two regression lines and rank correlation

RBT Levels: L1, L2 & L3

Module-II **8 hours**

Probability distributions:

Random variable (Discrete and continuous) probability density function, cumulative density function. Binomial distribution, Poisson distributions, Normal distribution and problems.

RBT Levels: L1, L2 & L3

Module-III **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 –IV **8 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 problems

RBT Levels: L1, L2 & L3

Text books:

1 Higher Engineering Mathematics by B.S.Grewal, Khanna publishers; 40th Edition.2007
2 Engineering Mathematics by N. P. Bali and Manish Goyal. Laxmi publications, latest edition

Reference books:

1.Advanced Engineering Mathematics by E. Kreyszig, John Willey & sons 8th Edn.
2.A short course in differential equations – Rainvile E.D.9th Edition.
3.Advanced Engineering Mathematics by R.K.Jain & S.R.K Iyengar; Narosa publishing House.
4.Introductory methods of numerical analysis by S.S.Sastry
5. Statistical Methods Authored By Gupta S.P. Publisher: Sultan Chand & Sons. Publishing Year: 2021
6.Fundamentals of Mathematical Statistics Authored By Gupta S.C.& Kapoor V.K. Publisher:Sultan Chand & Sons.Publishing Year: 2020

Course Outcomes: On completion of this course, students are able to:

CO1: Apply the method of least square to estimate the parameters in regression model

CO2: Solve problems using theoretical probability distributions

CO3: Apply the concepts of joint probability, to find covariance, correlation, independent variables

CO4: Analyze the sample data using Large sample tests

CO5: Analyze the sample data using t-distribution and chi- distribution