20MA209E					Probability and Statistics					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs. / Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	0	3	3	25	50	25	--	--	100

COURSE OBJECTIVES

- To be able to understand the concept of probability and probability distribution function.
- To be able to obtain the statistical measure of various real-world problem.
- To be able to analyze the probability distribution in view of various problems of engineering.
- To be able study various central tendency, curve fitting and correlation.

Prerequisite – Basics of Probability, Conditional Probability, Total Probability, Baye's Theorem.

UNIT 1 RANDOM VARIABLES **10 Hrs.**

Random variables. Discrete random variable, Continuous random variable, Expectation, Variance, Moment generating function.

UNIT 2 DISTRIBUTION FUNCTIONS **10 Hrs.**

Discrete probability distribution functions, Binomial distribution, Negative binomial distribution, Poisson distribution, Continuous probability density function, Normal distribution.

UNIT 3 CURVE FITTING AND REGRESSION **10 Hrs.**

Measure of central tendency, Curve fitting, Correlation, simple correlation, partial correlation, regression analysis.

UNIT 4 BASICS Of R PROGRAMMING **10 Hrs.**

Introduction, Operators: Arithmetic, logical and relational, Control structures: loops and if-else statements, Descriptive Statistics, Correlation and Regression.

40 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to
CO1 – Identify the use of probability in engineering aspects.
CO2 – Understand the concept of probability and statistics.
CO3 – Develop the ability to apply appropriate probability distribution in context with engineering problems.
CO4 – Analyze the obtained statistical solution in context with theory.
CO5 – Appraise mathematical problems in term of statistics from real to complex domain.
CO6 – Evaluate problems on various central tendency, fitting of curve, and regression and correlation.

TEXT/REFERENCE BOOKS

1. Jay L. Devore, Probability and Statistics for Engineering and the Sciences, Cengage Learning, 2012.
2. Ronald E. Walpole, Sharon L. Myers and Keying Ye, Probability & Statistics for Engineers & Scientists, 8th ed., Pearson Education, 2006.
3. Sheldon M. Ross, "Introduction to Probability Models" Academic Press, 10th edition, 2019.
4. Sheldon M. Ross, Introduction to Probability and Statistics for Engineers and Scientists, Academic Press, 4th edition, 2014.
5. S.C. Gupta & V.K. Kapoor, "Fundamentals of Mathematical Statistics" Sultan Chand & Sons, 11th Edition, 2014.
6. Alain F. Zuur Elena N. Ieno Erik H. W. G. Meesters "A Beginner's Guide to R" Springer, 2009.
7.