

COURSE CODE: 2CM2010113	COURSE TITLE: MATHEMATICAL STATISTICS:-1
SEMESTER-1, COURSE TYPE : SPECIALIZATION	
COURSE OBJECTIVE: To present a clear, simple systematic and comprehensive exposition of the methods, principles and techniques of Statistics in various discipline with special reference to commerce, management, economics and business.	

Teaching Scheme (Hours per week)		Evaluation Scheme (Marks)		
Lectures	Credit	University Assessment	Institutional Assessment	Total
4	4	60	40	100

Unit	Topic and Contents	Hours	Wt. (%)
1.	Mathematical Statistics & Distribution: Theory Factorial and Cumulant generating function. Definition of characteristic function and its properties without proof. Statement of inversion theorem (without proof) on characteristic function. Their uses for binomial, Poisson and normal distributions. Definition of a statistic and its standard error, standard error of sample mean, sample standard deviation and sample correlation co-efficient and uses of standard error.	15	25%
2.	Elements of Markov chain Definition of Markov chain with finite state space. Definition of a transition probability matrix and initial probability distribution of Markov chain. Statement of Chapman – Kolmogorov equations. Simple application of Markov chain and examples with state space up to three states only.	15	25%
3.	Distribution Theory: Negative binomial and Multinomial distribution, Uniform, Exponential, Gamma and Log normal distributions. χ^2 , t, F distributions - Statement of p.m.f / p.d.f within of their mean and variance. Statement of other properties without proof.	15	25%
4.	Continuous Probability Distribution. Continuous univariate probability distribution. Definitions of moments etc for univariate continuous probability distributions. Characteristic function and its properties, Fourier's inversion theorem. Chebychev's Lemma (law of Large number), Bernoulli's theorem. Continuous bivariate probability distributions. Bivariate normal distribution, probability density function of B. N. D., properties of B. N. D. (Results and numerical examples should be asked)	15	25%

References Books:

1. Feller W. : Introduction to Prob. Theory And applications Vol Eastern)
2. Goon, Gupta and Dasgupta (1970) : An outline of Statistical Theory Vol. I & II (World Press, Calcutta)
3. Hogg and Craig (78) : Introduction to Mathematical Statistics (Collier - M)

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4. Jaiswal M.C. (1972) : Statistical Distributions, Gujarat University, Ahmedabad
 5. Meyer P.L. (1970) : Introduction to Probability and Statistical Applications (Addison - Wesley)
 6. Mohse-Beh-Horim and Levy H.(1984) : Statistical Decision and applications in business and Economics, McGraw Hill)
 7. Rohatgi V.R.(1984) : Introduction to prob. Theory and Mathematical Statistics (Wiley Eastern)
 8. S. C. Gupta and V. K. Kapoor (1990) : Fundamentals of applied Statics (Sultan Chand and Sons)