

Course Type	Course Code	Name of Course	L	T	P	Credit
DC	NMCC503	Statistics in Decision Makings	3	1	0	4

Course Objective

- To equip the students with statistical tools applicable in decision making process.

Learning Outcomes

- After completion of this course, students will be equipped with the knowledge of analyzing the data generated in real life problems with the help of important statistical tools and techniques.

Unit No	Topics	Contact Hours	Learning Outcome
1.	Basic probability theory and related results, Bayes theorem, probability mass and density functions, mathematical expectation, moment generating function, binomial, Poisson, normal, log-normal, exponential and bivariate normal probability distributions.	9L+3T	Gives the idea about fundamentals of probability theory with some important discrete and continues probability distributions.
2.	Estimation: Criteria of good estimator, minimum variance unbiased estimation, use of Cramer-Rao inequality and Rao- Blackwell theorem, methods of estimation, interval estimation and Bayesian estimation.	9L+3T	Gives the idea about classical and Bayesian estimation procedures applicable in real life problems.
3.	Hypothesis testing: Definitions of various terms, tests based on normal, chi-square, t and F distributions, tests for correlation and regression coefficients, tests of proportion and independent of attributes, paired t-test.	9L+3T	Gives the idea about testing of hypothesis and important tests applicable in data analytics.
4.	Non-Parametric tests: Sign test, Mann-Whitney Wilcoxon U- test, run test.	5L+3T	Gives the idea about non-parametric tests applicable for the situations where normality assumption is doubtful.
5.	One-way and two-way analysis of variance. Basic design of experiments: CRD, RBD, LSD and their applications.	10L+2T	Gives the idea about basic analysis of variance and basic design of experiments applicable in most of the industry-oriented problems.
Total		42L+14T	

Text Books:

- Fundamentals of Mathematical Statistics by Gupta S.C. and Kapoor V. K., Sultan Chand & Sons.
- Fundamentals of Applied Statistics by Gupta S.C. and Kapoor V. K., Sultan Chand & Sons.

Reference Books:

- An Introduction to Probability Theory and Mathematical Statistics, by Rohatgi V. K. and Saleh, John Wiley.
- Introduction to the Theory of Statistics by Mood M., Graybill F. A. and Boes D. C., Tata McGraw-Hill.