

1.	Title of the course	Advanced Statistical Inference
2.	Course number	MA704L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To MA7103/7
6.	To be offered by	Department of Mathematics and Statistics
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	<b>Course Objective(s):</b> To demonstrate the advanced methodologies of statistical inference, like Minimal Sufficiency, Bhattacharya's bound, Bayes and Minimax Procedure, Minimum Risk Equivariant (MRE) Estimators.	
10.	<b>Course Content:</b> Concept of Statistical Inference, Point Estimation, Methods of Estimations, Properties of Estimation, Uniformly Minimum Variance Unbiased Estimators (UMVUE), Rao-Cramer Lower Bound, Bhattacharya's Bound, Minimal Sufficiency, Rao-Blackwell Theorem, Lehmann-Scheffe Theorem, Interval Estimation, Testing of Hypothesis, Type-I and II error, Power of the test, The Neyman-Pearson Fundamental Lemma, Uniformly Most Powerful Test, Unbiased Test, Invariance, Likelihood Ratio Test, Decision Theory, Bayes and Minimax Procedure, Minimum Risk Equivariant (MRE) Estimators.	
11.	<b>Textbook(s):</b> 1. Lehmann E L, and Casella G, <i>Theory of Point Estimation</i> , Springer (2006). 2. Lehmann E L, and Romano J P, <i>Testing of Statistical Hypotheses</i> , Springer (2006).	
12.	<b>Reference(s):</b> 1. Shao J, <i>Mathematical Statistics</i> , Springer (1998).	