

**INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI**  
**PROFORMA FOR NEW COURSE**

1.	Title of the Course	Advanced Statistical Inference
2.	Course Number	MA7103
3.	Status of the Course	Core
4.	Structure of Credits	3-0-0-3
5.	Offered To	PG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Mathematics
8.	To take effect from	July 2019
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	<b>Course Objective:</b> To demonstrate the advanced methodologies of statistical inference, like Minimal Sufficiency, Bhattacharya's bound, Bayes and Minimax Procedure, Minimum Risk Equivariant (MRE) Estimators.	
12.	<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.	
13.	Text book(s): 1. E. L. Lehmann, G. Casella, <i>Theory of Point Estimation</i> , Springer, (2006). 2. E. L. Lehmann, J. P. Romano, <i>Testing of Statistical Hypotheses</i> , Springer, (2006).	
14.	Reference(s): 1. J. Shao, <i>Mathematical Statistics</i> , Springer, (1998).	