National Institute of Technology Rourkela

Registration Seminar

Seminar Title	: Reliability analysis of a dynamic system for the general family of inverted exponentiated distributions through sequential order statistics
Speaker	: Kaushik Gupta (Rollno : 523ma1005)
Supervisor	: Suchandan Kayal
Venue	: Seminar Room, Department of Mathematics
Date and Time	: 13 May 2025 (10.15 A.M.)
Abstract	: Reliability studies in several engineering domains have recently made extensive use of the general family of inverted exponentiated distributions. Using a general family of inverted exponentiated distributions as a baseline model, we have constructed a number of statistical conclusions on the composite dynamic system in this work. Through a power-trend mechanism, component failure in this dynamic system raises the component hazard rate by placing an increased burden on the remaining components. The Bayesian and classical point estimates for the unknown parameters that constitute the composite system are obtained using the Markov chain Monte Carlo and the maximum likelihood methodologies, respectively. To get Bayes estimates for the parameters that are unknown with the squared error as well as generalized entropy loss functions, we have used independent gamma priors in the Bayesian framework. The interval estimates associated with the baseline reliability function are obtained using the Fisher information matrix and the Bayesian technique. A parametric hypothesis test is provided to ascertain whenever the failed components change the hazard rate function. Finally, a simulation analysis is carried out to examine how the proposed estimate methodologies behave.