

## PROFORMA FOR NEW COURSE

1.	Title of the Course	Categorical Data Analysis
2.	Course Number	MA6031
3.	Status of the Course	Elective
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 and Statistics
8.	To take effect from	July 2020
9.	Prerequisite	CoT
10.	Whether approved by the Department	Yes
11.	<b>Course Objective:</b> To introduce basic concepts of common statistical models to analyse categorical data with applications to relevant areas. To vivify the methods of testing dependencies among two or more qualitative variables. To discuss the methods of selecting, fitting and testing logistic models along with examples to apply for real data.	
12.	<b>Course Content:</b> Contingency tables, joint, marginal, and conditional probabilities, independence, comparing proportions, relative risk, odds ratios, inference for odds ratios, tests of independence, Pearson statistic, chi-square distribution, likelihood ratio statistic, tests of independence for ordinal data, exact inference for small samples, models of binary response variables, logistic models, confidence intervals for effects and probabilities, significance testing, logistic regression with categorical predictors, multiple logistic regression, model selection, stepwise variable selection algorithm, AIC criteria, model checking, likelihood-ratio tests, goodness of fit test, deviance, multi-category logit models.	
13.	<b>Text book(s):</b> 1. Agresti A, <i>An introduction to categorical data analysis</i> , 2nd Edition, John Wiley & Sons (2007).	
14.	<b>Reference(s):</b> 1. Andersen E B, <i>The Statistical Analysis of Categorical Data</i> , 3rd Edition, Springer-Verlag (2012). 2. Fahrmeir L and Tutz G, <i>Multivariate Statistical Modelling Based on Generalized Linear Models</i> , 2nd Edition, Springer-Verlag (2001). 3. Michael F and David M, <i>Discrete Data Analysis with R : Visualization and Modeling Techniques for Categorical and Count Data</i> , 1st Edition, Chapman and Hall (2015). 4. Santner T J and Duffy D, <i>The Statistical Analysis of Discrete Data</i> , 1st Edition, Springer-Verlag (1989).	