Programme Name: M. Sc. Statistics

PROGRAMME OUTCOMES:

1. Upon completion of the programme students gain the knowledge of statistical theory and methods helps in modelling the data arise in many real life situations.
2. Students learn quantitative modelling and data analysis techniques to solve real world business problems, communicate findings, and effectively present results using data visualization techniques.
3. Students get expertise in applications of statistical techniques so that they can make career as a statistician.

PROGRAM SPECIFIC OUTCOMES:

1. Understand and critically apply the statistical methods to solve problems in many fields like, clinical trials, policy making in any organizations, market analytics, etc.
2. Apart from many theoretical and statistical computing courses, we offer the course on Business Statistics and Project management in second semester helps in understanding Project Management/Change Management in all Behaviour, Leadership skills, understanding business problems and to find solutions using Statistical techniques.

Specific Course outcomes:

Semester	Course Name	Course Outcomes
I	Real Analysis and Linear Algebra	1. To be able to understand mathematical concepts needed to learn theory of Probability and Statistics. 2. To be able to understand mathematical concepts needed in higher dimensions to learn theory of Multivariate Statistics.
	Probability Theory	1. To be able to understand in quantifying uncertainty in many real life situations. 2. Understanding the concepts of probability theory in higher level which is used in further courses/papers and its applications in real life.
	Distribution Theory	1. Students will get exposure to Statistical Distributions and its properties. 2. To be able to understand data modelling using standard distributions.
	Sampling Theory and Applications	1. Students will understand theory of various Sampling Techniques used in real life situations. 2. To able to apply various sampling techniques while conducting sample survey in many instances.

	Estimation Theory	1. Students will be able to develop estimators for population characteristics using different Estimation Techniques. 2. Study the properties of the developed estimators in sample samples and using large sample theory.
	Statistical Computing with Worksheet	1. Students get exposure to the data preparation, manipulations and analysis tools available in Microsoft Excel. 2. Also students will learn writing macros to solve specific problems in using Excel .
	Statistical Computing with R	1. Students learn fundaments and advance tools of R programming language. 2. Data preparation and Visualizations. 3. To carryout statistical analysis using R.
II	Linear Models	1. Understand the theoretical foundations for Linear estimation theory and Regression Analysis.
	Testing of Hypothesis	1. Students will understand concepts of Statistical hypothesis, developing tests to test the hypothesis. 2. Formulation of Statistical hypothesis is real life situations. Apply appropriate test to validate the hypothesis. 3. Efficiency of various standard tests available in the literature .
	Stochastic Processes	1. Students get introduction to the different stochastic/random processes, theoretical foundations for Stochastic Processes. 2. Applications of Stochastic processes in queuing theory, applied sciences, etc.
	Business Statistics and Project Management	1. Students will be able to understand applications of Statistics in Business and decision making in analytics. 2. Project management and its executions.
	Regression Analysis	1. To be able to understand regression Techniques used its applications. 2. Regression Model Diagnostics, use of regression analysis when response variable is categorical data.
	Programing Analytics	1. Students get exposure to Base SAS. 2. Data Preparation, manipulations and Analysis using SAS.
	Statistical Computing with Python	1. Students get exposure to Python programming language. 2. Data Preparation, manipulations and Analysis using Python.
	Applied Multivariate Analysis	1. Student will be able to understand theory of Multivariate Statistical analysis and

III		data Analysis using Multivariate techniques. 2. Visualization and analysis of multivariate data using suitable software package.
	Design and Analysis of Experiments	1. To understand theory of planning, and Design of experiments. 2. Analysis of data arise from experiments using various models available.
	Time Series Analysis	1. Students will be able to understand time series data and the theory of time series models used for modelling time series data. 2. Model diagnostics and Forecasting future values.
	Elective-I	Electives will be chosen from list given below
	Elective-II	
	Predictive Modelling	1. Students will understand advanced statistical modelling using SAS predictive modelling. 2. Interpreting the results, automating the process, Preparation of reports using SAS predictive modelling.
	Statistics with Machine Learning	1. The student is well get exposure to fundamental concepts and algorithms available in machine learning techniques. Their applications in day to day real life. 2. Students will be able to understand advantage of machine learning techniques over traditional predictive modelling.
IV	Project Work	1. Students gain experience in handling raw data. Formulation of objectives to the business problems and to find solutions using various statistical techniques available. 2. Develop professional skills helps in contributing to the growth of organization. 3. Enhances job opportunities for the students.

List of Electives

1. Stochastic Finance
2. Survival Analysis
3. Bayesian Inference
4. Nonparametric Inference
5. Statistical Quality Control
6. Statistical Methods for Reliability