Department of Statistics
Institute of Social Sciences

Program Name and Code	**M.Sc. (Data Science)** **Programe Code: 385**
Program Educational Objectives (PEO's)	The primary objective of the MSc. program in Data Science is to develop skilled professional workforce that is prepared to address the increasing needs in the rapidly expanding area of big data analytics. The program aims to provide skills in quantitative data analyses, data mining, data modeling and prediction, data storage and management, big data processing, data visualization, multimedia big data, programming and communication skills. Software based courses/ training and a large number of practical case studies have been integrated in the program to boost the learner confidence and market acceptability.
Program Outcomes (PO's) :	On completion of M.Sc. Data Science programme, graduates will be able to • Become a skilled Data Scientist in industry, academia, or government organizations. • Use specialist software tools for data storage, analysis and visualization. • Independently carry out research/investigation to solve practical problems

M.Sc. (Data Science): I Semester

Course Code: MDS 101	**Descriptive Statistics for Data Science**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To have basic idea about the presentation and analysis of the data.	
Course outcomes:	On successful completion of this course, the students will be able to • Present data in different graphical forms • Formulate the data and draw inference using parametric and non-parametric tests.	
Course Code: MDS 102	**Linear Algebra and Matrix Computation**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To study the theory of linear algebra in the light of data science.	
Course outcomes:	On successful completion of this course, the students will be able to • Conceptualized the fundamentals of vectors and metrics in linear algebra. • Apply these concepts in the field of data science.	
Course Code: MDS 103	**Regression Analysis and Predictive Modeling**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To introduce the advanced regression analysis and to study theprediction based modeling.	
Course outcomes:	On successful completion of this course, the students will be able to • Formulate the linear models in the field of data science. • Use these models in real life problems for prediction.	
Course Code: MDS 104	**Probability and Distribution Theory**	**Credit: 4** **Max Marks: 75+25 =100**

Course objectives:	To introduce the concepts of probability and distribution theory using R
Course outcomes:	On successful completion of this course, the students will be able to • Apply the results of probability in data science using R. • Understand the concepts of Probability and its distribution using R.

Course Code: MDS 105	**Lab Work Based on MDS 101, 102, 103, 104**	**Credit: 4** **Max Marks: 75+25 =100**
Course outcome:	To learn real life/industry applications of theory	

M.Sc. (Data Science): II Semester

Course Code: MDS 201	Programming for Data Science with R	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To Introduce the elementary and advanced concepts of R language.	
Course outcomes:	On successful completion of this course, the students will be able to • Describe statistical modeling using R • Apply these modeling tools in Statistical/Machine learning	
Course Code: MDS 202	Fundamental of Data Base Management System	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To Provide Knowledge of data base management through R.	
Course outcomes:	On successful completion of this course, the students will be able to • Know the objectives of data management • To extract data from various data bases	
Course Code: MDS 203	**Bayesian Data Analysis**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To introduce the elementary and advanced concepts of Bayesian DataAnalysis.	
Course outcomes:	On successful completion of this course, the students will be able to • Analyse the data through the techniques of Bayesian inference • Apply the Bayesian inference to real life scenario.	
Course Code: MDS 204	**Machine Learning**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To introduce the basis concepts of machine learning	
Course outcomes:	On successful completion of this course, the students will be able to • Describe the concepts of machine learning • Apply the machine learning tools in data science.	
Course Code: MDS 205	**Lab Work Based on MDS 201, 202, 203, 204**	**Credit: 4** **Max Marks: 75+25 =100**
Course outcome:	To learn real life/industry applications of theory	

M.Sc. (Data Science): III Semester

Course Code: MDS 301	**Multivariate Methods in Data Science**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To introduce the elementary and advanced concepts of multivariateanalysis.	
Course outcomes:	On successful completion of this course, the students will be able to • Describe the methods and techniques of multivariate analysis in data	

	science. • Apply these methods & techniques in real life problem.	
Course Code: MDS 302	**Programming for Data Science with Python**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To introduce the basic and advanced elements of Pythonprogramming	
Course outcomes:	On successful completion of this course, the students will be able to • Demonstrate the programming skills in Python • Apply the Python programming for data analysis	
Course Code: MDS 303	**Operations Research**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To introduce the basic and advanced concept of Operations Research	
Course outcomes:	On successful completion of this course, the students will be able to • Formulate the real life decision making problem into mathematical model. • Solve complex decision making problems through various techniques of Operations Research.	
Course Code: MDS 304	**Time Series Analysis**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To provide knowledge of elementary and advanced concepts of TimeSeries Analysis	
Course outcomes:	On successful completion of this course, the students will be able to • Demonstrate the concepts of time series analysis • Forecasts with valid conclusions based on appropriate time series data.	
Course Code: MDS 305	**Lab Work Based on MDS 301, 302, 303, 304**	**Credit: 4** **Max Marks: 75+25 =100**
Course outcome:	To learn real life/industry applications of theory	

M.Sc. (Data Science): IV Semester

Course Code: MDS 401	**Big Data Analytics**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To study the specialized aspects of big data analytics.	
Course outcomes:	On successful completion of this course, the students will be able to • Identify big data and its real life implications • Analyze the problem of big data with the help of R and Hadoop	
Course Code: MDS 402	**Marketing Research and Analysis**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To improve the quality of decision making of marketing researchthrough the study of relevant data and information	
Course outcomes:	On successful completion of this course, the students will be able to • Evaluate and design marketing research problems. • Analyze the marketing research models with the help of R Programming.	
Course Code: MDS 403	**Spatial Statistics for Remotely Sensed Images**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To study data analysis with reference to spatial data.	
Course outcomes:	On successful completion of this course, the students will be able to • Understand spatial data, image, image format, types of images • Classifications and analysis of supervised and unsupervised images.	
Course Code: MDS 404	**Cloud Computing**	**Credit: 4** **Max Marks: 75+25 =100**

Course objectives:	To provide the conceptual knowledge of Cloud Computing	
Course outcomes:	On successful completion of this course, the students will be able to • Develop technological foundation of cloud computing • Make innovations using cloud computing	
Course Code: MDS 405	**Lab Work Based on MDS 401, 402, 403, 404**	**Credit: 4** **Max Marks: 75+25 =100**
Course objectives:	To learn real life/industry applications of theory	

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