

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (June - November 2026)

Department : Mathematics

Name/s of the Faculty : Dr. S. Sarah Surya (4 hours) & Dr. K. Arputha Christy (2 hours)

Course Title : Data Science using Python

Course Code : 25MT/ME/DS33

Shift : I

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	recall fundamental concepts, techniques, and tools used in data science, including data collection, processing, and modeling	K1
CO2	explain data analysis techniques, visualization methods, and machine learning principles for effective decision-making	K2
CO3	apply programming, statistical methods, and algorithms to manipulate, analyze, and interpret data	K3
CO4	analyze data patterns, model performance, and computational efficiency to derive meaningful insights	K4
CO5	evaluate real-world data science problems	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 15 – 22, 2026 (Day Order 1- 6)	1	Introduction to Data Science 1.1 Definition and importance of Data Science, Differences between Data Science, Data Analytics, and related fields, Roles in Data Science: Data Scientist, Data Analyst, Data Engineer	K1-K2	4	CO1-2	Discussion	Quiz
Jun 23 – July 1, 2026 (Day Order 1- 6)	1	Introduction to Data Science 1.2 The Data Science Process: Problem formulation, Data collection and preparation, Data exploration and visualization, Model building and evaluation, Communicating results	K1-K2	4	CO1-2	Lecture	Quiz
July 2 – July 8, 2026 (Day Order 1- 6)	1	Introduction to Data Science 1.3 Data collection and Preprocessing Techniques Data Summary and Visualization 2.1 Summary Statistics: Measures of Central Tendency:	K1-K5	4	CO1-5	Demonstration	Presentation

	2	Mean, Median, Mode - Measures of Dispersion: Range, Variance, Standard Deviation - Skewness and Kurtosis 2.2 Data Visualization Tools: Using Matplotlib and Seaborn for Plotting - Bar Plots, Histograms, Box Plots, Scatter Plots - Heatmaps for Correlation Analysis					
July 9 – 16, 2026 (Day Order 1- 6)	2	Data Summary and Visualization 2.1 Summary Statistics: Measures of Central Tendency: Mean, Median, Mode - Measures of Dispersion: Range, Variance, Standard Deviation - Skewness and Kurtosis 2.2 Data Visualization Tools: Using Matplotlib and Seaborn for Plotting - Bar Plots, Histograms, Box Plots, Scatter Plots - Heatmaps for Correlation Analysis	K1-K5	4	CO1-5	Lecture & Demonstration	Presentation
July 17 – 24, 2026 (Day Order 1- 6)	2	Data Summary and	K1-K5	4	CO1-5	Lecture &	Third Component I

		Visualization 2.2 Data Visualization Tools: Using Matplotlib and Seaborn for Plotting - Bar Plots, Histograms, Box Plots, Scatter Plots - Heatmaps for Correlation Analysis				Demonstration	Quiz on Units 1 & 2 Marks: 10
July 25 – 28, 2026 (Day Order 1- 3)	3	Data Handling and Exploration 3.1 Data manipulation: Filtering and Grouping Data - NumPy Arrays, Operations and Broadcasting	K1-K5	2	CO1-5	Demonstration	Quiz
July 29 – Aug 3, 2026	C.A. Test – I (Units 1 & 2)						
Aug 4 - 6, 2026 (Day Order 4 - 6)	3	Data Handling and Exploration 3.1 Data manipulation: Filtering and Grouping Data - NumPy Arrays, Operations and Broadcasting	K1-K5	2	CO1-5	Discussion	Assignment
Aug 7 – 14, 2026 (Day Order 1- 6)	3	Data Handling and Exploration 3.2 Exploratory Data Analysis: Identifying Missing Values and Outliers - Feature Engineering	K1-K5	4	CO1-5	Lecture	Presentation

		and Transformation					
Aug 17 - 24, 2026 (Day Order 1- 6)	3	Data Handling and Exploration 3.2 Exploratory Data Analysis: Identifying Missing Values and Outliers - Feature Engineering and Transformation	K1-K5	4	CO1-5	Demonstration	Third Component II Solving under graduate statistical problems in PYTHON Marks: 20
	4	Machine Learning Models 4.1 Introduction to Supervised and Unsupervised Learning					
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	4	Machine Learning Models 4.2 Linear Regression: Simple and Multiple Linear Regression - Understanding Coefficients and Residuals	K1-K5	4	CO1-5	Lecture & Demonstration	Quiz
Sep 3 – 11, 2026 (Day Order 1- 6)	4	Machine Learning Models 4.2 Linear Regression: Simple and Multiple Linear Regression - Understanding Coefficients and Residuals 4.3 Classification Models: Logistic Regression, Decision Trees and Random Forest	K1-K5	4	CO1-5	Lecture & Demonstration	Project

