

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (June - November 2026)

Department : Computer Science
Name/s of the Faculty : Dr. Harshini Manoharan
Course Title : FUNDAMENTALS OF DATA SCIENCE
Course Code : 24DS/PC/FS14
Shift : II

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	recall the types of data, types of analytics, and the steps involved in the data science life cycle	K1
CO2	illustrate the essential mathematical concepts used in data science	K2
CO3	identify various data-intensive operations and related tools	K3
CO4	analyze data and evaluate the effectiveness of tools and visualization techniques	K4
CO5	adapt better data science approaches and develop a solution to address a real-world problem	K5,K6

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
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Jun 15 – 22, 2026 (Day Order 1- 6)	1	1. INTRODUCTION OF DATA SCIENCE 1.1 Data Science – Data science Venn diagram - Basic terminology – Data science case studies	K1-K6	5	1-5	Lecture / Presentation	Discussion
Jun 23 – July 1, 2026 (Day Order 1- 6)	1	Types of data – levels of data- Types of data analytics - Descriptive analytics	K1-K6	5	1-5	Lecture / Presentation	Quiz
July 2 – July 8, 2026 (Day Order 1- 6)	1	Diagnostic analytics- Predictive analytics- Prescriptive analytics- Five steps of Data science	K1-K6	5	1-5	Storytelling	Discussion
July 9 – 16, 2026 (Day Order 1- 6)	2	2. MATHEMATICAL PRELIMINARIES 2.1 Basic Math’s – mathematics as discipline – basic	K1-K5	5	1-5	Learning by doing	Component I (Unit 1) Assignment (10 marks) Role of Data Analytics

		symbols and terminology					across different sectors
July 17 – 24, 2026 (Day Order 1- 6)	2	linear algebra 2.2 Basic Probability – definitions- probability – Bayesian vs frequentist compound events	K1-K5	5	1-5	Problem solving method	Quiz
July 25 – 28, 2026 (Day Order 1- 3)	2	conditional probability – rules of probability	K1-K5	2	1-5	Problem solving method	Component I (Unit 2) Numerical problem test on probability – 15 marks
July 29 – Aug 3, 2026	C.A. Test - I						
Aug 4 - 6, 2026 (Day Order 4 - 6)	3	3.1 DATA MINING AND DATA WAREHOUSING Introduction to Data warehousing	K1-K6	2	1-5	Lecture / Presentation	Discussion
Aug 7 – 14, 2026 (Day Order 1- 6)	3	Design consideration of data warehouse - Data loading proces	K1-K6	5	1-5	Lecture / Presentation	Discussion
Aug 17 - 24, 2026 (Day Order 1- 6)	3	case study – Data mining – Data mining techniques – Tools and	K1-K6	5	1-5	Case study	Discussion

		platforms – case study					
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	4	4.1 VISUALIZING DATA Exploratory Data Analysis – Developing the visual aesthetic	K1-K6	5	1-5	Lecture / Demos	Python programs
Sep 3 – 11, 2026 (Day Order 1- 6)	4	chart types – Great visualizations	K1-K6	5	1-5	Lecture / Demos	Python programs
Sep 15-17, 2026 (Day Order 1 - 3)	4	Reading graphs – Interactive visualizations	K1-K6	2	1-5	Lecture / Learning by doing	Component II (15 marks) Unit 4 To perform exploratory data analysis on the given data set using python programming

Sep 18 –23, 2026	C.A. Test - II						
Sep 24 - 28, 2026 (Day 4 – 6)	5	5.1 Data Science – Recent Trends Applications of Data Science, recent trends in various data collection and analysis techniques	K1-K6	2	1-5	Lecture / Presentation	Classroom activity
Sep 29 – Oct 7, 2026 (Day Order 1 - 6)	5	various visualization techniques	K1-K6	5	1-5	Brainstorming	Component II (10 marks) Unit 4 Seminar/Presentation on visualization techniques
Oct 8 - 14, 2026 (Day Order 1 - 6)	5	application development methods used in data science.	K1-K6	5	1-5	Independent study	Seminar/Presentation
Oct 15 - 21, 2026 (Day Order 1- 4)	REVISION						

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (June - November 2026)

Department : COMPUTER SCIENCE

Name/s of the Faculty : Dr. Renuka Devi D

Course Title : Python Programming

Course Code : 24DS/PC/PP14

Shift : II

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	recall the components of a computer, demonstrate the appropriate use of data types, mathematical functions and strings in a program	K1
CO2	state the use of selection and looping constructs, compare and choose an appropriate construct for a given problem	K2
CO3	define Functions, Classes and Objects, defend the use of functions, classes and objects in a given problem	K3
CO4	define Strings and Lists, implement Lists and Strings appropriately, design new problems using appropriate data structures	K4
CO5	define Tuples, sets, dictionaries and files, compare programs with and without files, develop applications using the different data structures	K5,K6

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
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<p>Jun 15 – 22, 2026 (Day Order 1- 6) 5 Hrs</p>	<p>1</p>	<p>1.1 Introduction to Computers, Programs and Python - Introduction - Computer and its components - Programming Languages - Operating Systems - The history of Python - Introduction to python programming - Programming Style and Documentation - Programming Errors - Introduction to Graphics Programming</p>	<p>K1- K2</p>	<p>5</p>	<p>1-2</p>	<p>Presentation/ Demo/Case studies</p>	<p>Elicitation activity</p>
<p>Jun 23 – July 1, 2026 (Day Order 1- 6) 5 Hrs</p>	<p>1</p>	<p>1.2 Elementary Programming - Input - Output - Identifiers - Variables, Assignment Statements and Expressions - Simultaneous Assignments - Named Constants - Numeric Data Types and Operators - Evaluating Expressions and Operator Precedence - Augmented Assignment Operators - Type Conversion and Rounding</p> <p>1.3 Mathematical Functions, Strings and Objects - Introduction - Common Python Functions - Strings and Characters</p>	<p>K1- K2</p>	<p>5</p>	<p>1-2</p>	<p>Presentation/ Demo/Case studies</p>	<p>Brain storming activity</p>

July 2 – July 8, 2026 (Day Order 1- 6) 5 Hrs	1	Introduction to Objects and Methods - Formatting Numbers and Strings - Drawing various shapes with Colors and Fonts	K1- K2	2	1-2	Presentation/ Demo/Case studies	Quiz
	2	2.1 Selections - Introduction - Boolean Types, Values and Expressions - Generating Random Numbers	K1- K6	3	1-5		
July 9 – 16, 2026 (Day Order 1- 6) 5 Hrs	2	Different forms of if statements - Logical Operators - Conditional Expressions - Operator Precedence and Associativity	K1- K6	5	1-5	Presentation/ Demo/Case studies	Group Discussions
July 17 – 24, 2026 (Day Order 1- 6) 5 Hrs	2	2.2 Loops - Introduction - while, for , Nested Loops - break and Continue	K1- K6	5	1-5	Presentation/ Demo/Case studies	Component - 1 (25 Marks) MCQ Test
July 25 – 28, 2026 (Day Order 1- 3) 3 Hrs	3	3.1 Functions - Introduction - Defining and calling a function - Return single and multiple values - Positional, Keyword and Default Arguments	K1- K6	3	1-5	Presentation/ Demo/Case studies	Quiz
July 29 – Aug 3, 2026	C.A. Test - I						

Aug 4 - 6, 2026 (Day Order 4 - 6) 2 Hrs	3	Passing Arguments by Reference Values - Modularizing Code - Function Abstraction and Stepwise Refinement - Recursion	K1-K6	2	1-5	Presentation/ Demo/Case studies	Solve the puzzle
Aug 7 – 14, 2026 (Day Order 1- 6) 5 Hrs	3	3.2 Objects and Classes - Introduction - Defining Classes for Objects - UML Class Diagrams - Immutable vs Mutable Objects - Hiding Data Fields - Class Abstraction and Encapsulation - Object Oriented Thinking	K1-K6	5	1-5	Presentation/ Demo/Case studies	Quiz
Aug 17 - 24, 2026 (Day Order 1- 6) 5 Hrs	3	3.3 Inheritance and Polymorphism - Superclasses and Subclasses - Overriding methods Object class - Polymorphism and Dynamic binding	K1-K6	4	1-5	Presentation/ Demo/Case studies	Group Discussions
	4	4.1 More on Strings and Special Methods - Introduction -Str class	K1-K6	1	1-5		
Aug 25 – Sep 2, 2026 (Day Order 1- 6) 5 Hrs	4	Operator Overloading and Special Methods- Lists - Basics - Copying Lists - Passing Lists to Functions- Returning a List from a Function - Searching,	K1-K6	5	1-5	Presentation/ Demo/Case studies	Elicitation activity

		Sorting Lists					
Sep 3 – 11, 2026 (Day Order 1- 6) 5 Hrs	4	4.2 Multidimensional Lists - Processing Two - Dimensional Lists	K1- K6	5	1-5	Presentation/ Demo/Case studies	Peer discussions
Sep 15-17, 2026 (Day Order 1 - 3) 3 Hrs	4	Passing Two -Dimensional Lists to Functions - Multidimensional Lists	K1- K6	2	1-5	Presentation/ Demo/Case studies	Quiz
	5	5.1 Tuples, Sets and Dictionaries – Introduction - Tuples- Sets	K1- K6	1	1-5		
Sep 18 –23, 2026	C.A. Test - II						
Sep 24 - 28, 2026 (Day 4 – 6) 5 Hrs	5	Comparing the Performance of Sets and Lists - Dictionaries 5.2 Files and Exception Handling – Introduction - Text Input and Output - File Dialogs - Retrieving Data from Web -	K1- K6	5	1-5	Presentation/ Demo/Case studies	Component 2 (25 Marks) Seminar - 10 Marks Test - 15 Marks (Problem based)
Sep 29 – Oct 7, 2026 (Day Order 1 - 6) 5 Hrs	5	Exception Handling - Raising Exceptions - Processing Exceptions using Exception Objects -	K1- K6	5	1-5	Presentation/ Demo/Case studies	Quiz

Oct 8 - 14, 2026 (Day Order 1 - 6) 5 Hrs	5	Defining Custom Exception Classes - Binary IO Using Pickling Revision	K1- K6	2 3	1-5	Presentation/ Demo/Case studies	Solve the problem
Oct 15 - 21, 2026 (Day Order 1- 4)	REVISION						

Jun 15 – 22, 2026 (Day Order 1- 6) 5 Hrs	1	Installation of the required software Programs using basic data types and operators	K1- K6	5	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies
Jun 23 – July 1, 2026 (Day Order 1- 6) 5 Hrs	1	Programs involving Mathematical functions	K1- K6	5	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies
July 2 – July 8, 2026 (Day Order 1- 6) 5 Hrs	1 2	Program in String Manipulations Programs using different forms of if statement	K1- K6 K1- K6	2 3	1-5 1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies
July 9 – 16, 2026 (Day Order 1- 6) 5 Hrs	2	Drawing various shapes using turtle Programs involving repeated execution of a set of statements	K1- K6	5	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies
July 17 – 24, 2026 (Day Order 1- 6) 5 Hrs	2	Programs using break and continue Programs using random	K1- K6	5	1-5	Presentation/ Demo/Case studies	Component - 1 (25 Marks) Practical Test

July 25 – 28, 2026 (Day Order 1- 3) 3 Hrs	3	Modular programming using functions	K1- K6	3	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies
July 29 – Aug 3, 2026	C.A. Test - I						
Aug 4 - 6, 2026 (Day Order 4 - 6) 2 Hrs	3	Programs using positional, keyword and default argument	K1- K6	2	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies
Aug 7 – 14, 2026 (Day Order 1- 6) 5 Hrs	3	Programs using pass by value, pass by reference Programs using classes and objects	K1- K6	5	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies
Aug 17 - 24, 2026 (Day Order 1- 6) 5 Hrs	3	Programs using Inheritance	K1- K6	4	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies
	4		K1- K6	1	1-5		
Aug 25 – Sep 2, 2026 (Day Order 1- 6) 5 Hrs	4	Programs on Str class and special methods	K1- K6	5	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies

Sep 3 – 11, 2026 (Day Order 1- 6) 5 Hrs	4	Programs using Lists and List manipulation	K1- K6	5	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies
Sep 15-17, 2026 (Day Order 1 - 3) 3 Hrs	4	Programs using Two Dimensional Lists	K1- K6	2	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies
	5	Programs using Tuple and its methods	K1- K6	1	1-5		
Sep 18 –23, 2026	C.A. Test - II						
Sep 24 - 28, 2026 (Day 4 – 6) 5 Hrs	5	Programs with Set and Set manipulation Programs using Dictionaries Program comparing the performance of Sets and Lists	K1- K6	5	1-5	Presentation/ Demo/Case studies	Component 2 (25 Marks) Mini Project (Application based on Python) Implementation - 15 Marks Viva - 10 Marks
Sep 29 – Oct 7, 2026 (Day Order 1 - 6) 5 Hrs	5	Programs handling Text Files Programs handling Binary Files	K1- K6	5	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies

Oct 8 - 14, 2026 (Day Order 1 - 6) 5 Hrs	5	Programs handling exceptions Case study	K1- K6	2 3	1-5	Presentation/ Demo/Case studies	Practical Exercises/ Case studies
Oct 15 - 21, 2026 (Day Order 1- 4)	REVISION						

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (June - November 2026)

Department : COMPUTER SCIENCE
Name/s of the Faculty : Dr Swetha Margaret T A
Course Title : Information Security
Course Code : 24DS/PE/IS13
Shift : II

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	recall basic security concepts, attacks and defence mechanisms	K1
CO2	explain cryptographic principles, encryption algorithms, and secure communication technique	K2
CO3	choose and apply appropriate security techniques	K3
CO4	analyse security issues in social networking and networks	K4
CO5	evaluate and implement security policies and security practices	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 15 – 22, 2026 (Day Order 1- 6) 3 Hrs	1	1.1 Security Problem in Computing	K1- K2	5	1-2	Presentation/ Demo/Case studies	Cyber Attack Identification Challenge (students classify real-

		Meaning of "Secure" – Attacks - Meaning of Computer and information Security - Computer Criminals - Methods of Defense					world attack scenarios)
Jun 23 – July 1, 2026 (Day Order 1- 6) 3 Hrs	1	1.2 Cryptography Terminology and Background - Principles of Cryptography - Cryptography tools - Substitution Ciphers - Transpositions (Permutations)	K1- K2	5	1-2	Presentation/ Demo/Case studies	Design and exchange custom ciphers
July 2 – July 8, 2026 (Day Order 1- 6) 3 Hrs	1	Making "Good" Encryption Algorithms - The Data Encryption Standard (DES) – The AES Encryption Algorithm - Public Key Encryption - The Uses of Encryption	K1- K2	2	1-2 1-5	Presentation/ Demo/Case studies	Quiz and Discussion
July 9 – 16, 2026 (Day Order 1- 6) 3 Hrs	1	Digital Signatures and Certificates - Hybrid Cryptography Systems - Steganography -	K1- K5	5	1-5	Presentation/ Demo/Case studies	Secure Communication Simulation (role-play sender, attacker, receiver)
July 17 – 24, 2026 (Day Order 1- 6) 3 Hrs	1 2	Protocols for secure communication 2.1 Program Security Secure Programs – Non malicious Program Errors - Viruses and Other Malicious	K1- K5 K1-	5 5	1-5	Presentation/ Demo/Case studies	Component - 1 (25 Marks) MCQ Test

		Code	K5				
July 25 – 28, 2026 (Day Order 1- 3) 1 Hrs	2	Targeted Malicious Code Controls against Program Threats	K1- K5	1	1-5	Presentation/ Demo/Case studies	Quiz and Discussion
July 29 – Aug 3, 2026	C.A. Test - I						
Aug 4 - 6, 2026 (Day Order 4 - 6) 2 Hrs	3	3.1 Security Issues in Social Networking Acceptable Use Policies - Reasons for social media being hazardous to the corporate network	K1- K5	2	1-5	Presentation/ Demo/Case studies	Social Media Risk Audit of a sample profile
Aug 7 – 14, 2026 (Day Order 1- 6) 3 Hrs	3	Balancing Security and Social Networking in business -	K1- K5	3	1-5	Presentation/ Demo/Case studies	Debate: Privacy vs Connectivity
Aug 17 - 24, 2026 (Day Order 1- 6) 3 Hrs	3	Precautions that can be taken to secure the private information	K1- K5	3	1-5	Presentation/ Demo/Case studies	Network Defense Strategy Board Activity
	4	4.1 Security in Networks Network Concepts	K1- K5	3			
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	4	Threats in Networks - Network Security Controls - Intrusion	K1-	3	1-5	Presentation/	Intrusion Detection

3 Hrs		Detection Systems	K5			Demo/Case studies	Case Analysis
Sep 3 – 11, 2026 (Day Order 1- 6) 3 Hrs	4 5	Firewalls – Secure E-Mail 5.1 Administering Security Security Planning	K1- K5	3	1-5	Presentation/ Demo/Case studies	Email Phishing Detection Challenge
Sep 15-17, 2026 (Day Order 1 - 3) 1 Hrs	5	Risk Analysis	K1- K5	1	1-5	Presentation/ Demo/Case studies	
Sep 18 –23, 2026	C.A. Test - II						
Sep 24 - 28, 2026 (Day 4 – 6) 2 Hrs	5	Organisational Security Policies - Physical Security	K1- K5	2	1-5	Presentation/ Demo/Case studies	Component 2 (25 Marks) Security Policy Design – 10 Marks Case Study Presentation – 10 Marks Peer Assessment – 5 Marks
Sep 29 – Oct 7, 2026 (Day Order 1 - 6) 5 Hrs	3	5.2 Case Studies	K1- K5	3	1-5	Presentation/ Demo/Case studies	

							Cybersecurity Quiz Tournament (Kahoot/Gamified Learning)
Oct 8 - 14, 2026 (Day Order 1 - 6) 5 Hrs	3	5.2 Case Studies	K1- K5	3	1-5	Presentation/ Demo/Case studies	
Oct 15 - 21, 2026 (Day Order 1- 4)	REVISION						