

**SES's L.S. RAHEJA COLLEGE OF ARTS AND COMMERCE
(AUTONOMOUS)**



BOARD OF STUDIES: Information Technology and Data Science

Programme: B.Sc. (Cyber Security & Digital Forensics)

Semester: I

Nomenclature of the Course: Programming Fundamentals using Python

NEP Vertical: Major

Credit: 02

Total Marks: 50

Academic Year: 2026–27

(As per Choice Based Credit System under NEP 2020)



Unit-wise Detailed Syllabus

Unit	Detailed Contents	Andragogy	Hours
Unit I: Fundamentals of Programming & Python Basics	1. Introduction to Programming and Problem Solving 2. Algorithm and Flowchart Concepts 3. Features of Python and Applications in Cyber Security 4. Python Installation and Execution Modes 5. Variables and Data Types 6. Operators and Expressions 7. Input and Output Statements 8. Conditional Statements (if, if-else, nested if) 9. Looping Statements (for, while) 10. Break, Continue and Pass Statements	Concept explanation, Algorithm tracing, Dry run exercises	15
Unit II: Data Structures & Modular Programming	1. Strings and String Operations 2. Lists and List Methods 3. Tuples and Dictionaries 4. Functions – User Defined Functions 5. Recursion (Basic Concept) 6. File Handling (Read and Write Operations) 7. Exception Handling (try, except, finally) 8. Introduction to Python Modules 9. Basic Application Programs related to Cyber Security (Password Checker, Log File Reader – Conceptual)	Code walkthroughs, Logic building sessions, Small program design	15

Learning Objectives

1. To understand structured programming concepts.
2. To develop problem-solving skills using Python.
3. To implement control structures and data structures.
4. To introduce modular programming concepts.
5. To relate Python programming with Cyber Security applications.

Course Outcomes (CO)

CO No.	Course Outcome	Bloom's Level
CO1	Explain basic programming concepts and Python syntax	Remember (L1), Understand (L2)
CO2	Apply control structures to solve problems	Apply (L3)
CO3	Implement programs using lists, strings and functions	Apply (L3)
CO4	Develop file handling and exception handling programs	Apply (L3), Analyze (L4)
CO5	Design simple Python programs for security-related tasks	Apply (L3)

Suggested Readings

Sr. No.	Title	Author
1	Python Crash Course	Eric Matthes
2	Automate the Boring Stuff with Python	Al Sweigart
3	Programming in Python 3	Mark Summerfield
4	Python for Cybersecurity	Howard E. Poston

QUESTION PAPER PATTERN

A) Continuous Evaluation – 20 Marks

Particulars	Marks
Class Test	10
Assignment / Case Study	10
Total	20

(B) Semester End Examination – 30 Marks

Duration: 1 Hour

Duration: 1 Hour		
Question No.	Description	Total Marks
Q1	Attempt Unit I	
	A – Remembering	15
	B – Analysing	
	C – Applying	
OR		
	P – Remembering	15
	Q – Analysing	
	R – Applying	
Q2	Attempt Unit II	
	A – Remembering	15
	B – Analysing	
	C – Applying	
OR		
	P – Remembering	15
	Q – Analysing	
	R – Applying	