

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

Syllabus for Approval

BoS meeting held on: 04-04-2026

AC meeting held on: 07-04-2026

Board of Studies: Information Technology and Data Science

Sr. No.	Heading	Particulars
1	Nomenclature of the Course	Problem Solving Using Python
2	Eligibility for Admission	College Admission Regulations 2026
3	Passing Marks for Eligibility	40
4	Regulations	College Regulations on Admission
5	Programme	Bachelor of Science in Artificial Intelligence & Data Science
6	Semesters	I
7	NEP Vertical	Major
8	Credit	02
9	Level U.G/PG	U.G.
10	Pattern	Semester
11	Status	New
12	To be implemented from Academic Year	2026–27

Date:

Chairman / Chairperson:

(Dr. Prajakta Joshi)

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BOARD OF STUDIES: Information Technology and Data Science

Programme: B.Sc. (Artificial Intelligence & Data Science)

Semester: I

Nomenclature of the Course: Problem Solving 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
I	Python Fundamentals & Problem Solving Techniques 1. Introduction to Programming and Problem-Solving Approach 2. Algorithm and Flowchart Basics 3. Python Environment Setup and Syntax 4. Variables, Data Types, Type Casting 5. Operators and Expressions 6. Input and Output Statements 7. Control Structures – Conditional Statements (if, elif, else) 8. Looping Statements – for, while 9. Break, Continue, Pass 10. Basic Programs (Factorial, Prime, Fibonacci, Armstrong, etc.)	Live coding sessions, Board-based algorithm design, Debugging practice, Problem-solving worksheets	15
II	Data Structures & Modular Programming in Python 1. Strings and String Operations 2. Lists – Operations and Methods 3. Tuples and Dictionaries 4. Functions – User-defined Functions, Recursion 5. Lambda Functions 6. File Handling (Text Files) 7. Exception Handling 8. Introduction to Modules and Packages 9. Introduction to NumPy and Pandas (Basic Overview for Data Science)	Hands-on demonstrations, Case-based exercises, Code tracing, Small programming tasks	15

Learning Objectives

1. To understand structured problem-solving methodology.
2. To develop programming skills using Python.
3. To implement control structures and data structures.

4. To apply modular programming concepts.
5. To introduce Python tools used in Data Science.

Course Outcomes (CO)

CO No.	Course Outcome	Bloom's Level	PSO Mapped
CO1	Describe fundamental programming concepts and Python syntax	Remember (L1), Understand (L2)	PSO1
CO2	Apply control structures to solve computational problems	Apply (L3)	PSO2
CO3	Implement Python data structures effectively	Apply (L3)	PSO2, PSO3
CO4	Develop modular programs using functions and file handling	Apply (L3), Analyze (L4)	PSO2
CO5	Identify Python libraries used in Data Science	Understand (L2)	PSO3

Suggested Readings

Sr. No.	Title	Author / Source
1	Python Crash Course (3rd Ed.)	Eric Matthes
2	Automate the Boring Stuff with Python	Al Sweigart
3	Programming in Python 3	Mark Summerfield
4	Introduction to Python for Data Science	Wes McKinney

QUESTION PAPER PATTERN

(A) FOR CONTINUOUS EVALUATION

Particulars	Marks
Class Test	10
Assignment / Programming Task	10
Total	20

B) FOR SEMESTER END EXAMINATION

Maximum Marks: 30

Duration: 1 Hour

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