

COURSE DESCRIPTION			
Program	Computer Application & Business Management		
Course Title	Introduction to Python Lab		
Course Code	1259	Semester	I
Type of Course	Lab	Contact Hours	45
Teaching Scheme (L: T:P:R)	0:0:3:0	Credits	1.5
CIE Marks	60	ESE Marks	40

Introduction

This laboratory course is designed to provide hands-on experience in Python programming. It helps students understand programming logic and develop problem-solving skills by applying Python fundamentals, control structures, functions, strings, and built-in data structures through practical exercises.

Course Objectives

1	To understand python fundamentals, variables, and operators.
2	To apply decision control and looping statements to solve simple problems.
3	To develop python programs using functions and string operations.
4	To implement python programs using built-in data structures.

Course Pre-requisite

Topic	Course code	Course Title	Semester
Basic understanding of Computer terminologies			Secondary Education

Course Outcome

CO	Course Outcome	Blooms Taxonomy Level
CO1	Apply Python fundamentals and operators to write simple programs.	Apply
CO2	Use decision control and looping statements to solve logical problems	Apply
CO3	Develop Python programs using functions and string operations.	Apply
CO4	Implement Python programs using built-in data structures.	Apply

CO-PO mapping

COURSE ARTICULATION MATRIX											
Course Outcomes	PROGRAM OUTCOMES										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	-	-	3	-	-	-	-	-	-
CO2	3	3	2	2	3	-	-	-	-	-	-
CO3	3	3	2	2	3	-	-	-	-	-	-
CO4	3	3	2	2	3	-	-	-	-	-	-
Total	12	11	6	6	12	-	-	-	-	-	-
Correlation Level	3	2.75	2	2	3	-	-	-	-	-	-

Legends: 1 - Low; 2 - Medium; 3 - High; No Correlation - "-"

Teaching and Assessment Scheme

Teaching Scheme/Week				Self-learning (SS)/Week	Total Hours/Semester	Credits C	Examination Scheme						
							Theory			Practical			Total
L	T	P	S				CIE	ESE	Total	CIE	ESE	Total	
0	0	3	0	1.5	45	1.5				60	40	100	100

L: Lecture (One unit is of one-hour duration with one credit), T: Tutorial (One unit is of one-hour duration with one credit), P: Practical (One unit is of one-hour duration with 0.5 credit), S: Project (One unit is of one-hour duration with 0.5 credit) SS: Self-Learning, CIE: Continuous Internal Evaluation, ESE: End Semester Examination

Detailed Syllabus

Expt No.	Experiment name	Practical Outcome	Mapped CO	Taxonomy Level	Instructional Hours
Module I					
1	Arithmetic Operations	Write Python programs to perform basic arithmetic operations using variables and operators.	CO1	Apply	3
2	Area of a Rectangle	Develop a Python program to calculate the area of a rectangle using input values and arithmetic operators.	CO1	Apply	3
3	Simple Interest Calculation		CO1	Apply	3
Module II					
4	Odd or Even	Develop a Python program using decision control statements to check whether a given number is odd or even.	CO2	Apply	3
5	Largest among Three Numbers	Apply conditional statements to find the largest among three given numbers.	CO2	Apply	3
6	Print N Natural Numbers and Their Sum	Implement looping statements to print the first N natural numbers and compute their sum.	CO2	Apply	3
	Series Exam - I		CO2	Apply	3
Module III					
7	User-Defined Function – Factorial of a Number	Write a Python program to define and use a user-defined function to calculate the factorial of a given number. String Operations	CO3	Apply	3
8	Function with Default Arguments	Develop a Python program using a function with default arguments	CO3	Apply	3
9	String Operations	Perform string manipulation using built-in string methods such as length, reverse, and concatenation	CO3	Apply	3
Module IV					
10	List Operations	Implement Python programs to perform insertion, deletion, and traversal operations on lists.	CO4	Apply	3
11	Tuple, Set, and Dictionary Operations	Use Python programs to store and manipulate data using tuples, sets, and dictionaries.	CO4	Apply	3
12	Integrated Data Structures	Develop a Python program by integrating multiple data structures in a single application.	CO4	Apply	3
	Series Exam - II		CO4	Apply	3
	Open ended Experiment		CO4	Apply	3

Open-ended experiment**Objective:**

To encourage creativity, innovation, and application of knowledge by allowing students to design and perform an experiment beyond the prescribed list, using the concepts learned during the course.

Description:

At the end of the laboratory course, each student (or group of students) shall undertake one open-ended experiment. In this activity, students are expected to conceive, design, and implement an experiment of their own choice related to the course outcomes. The aim is to apply theoretical knowledge and laboratory skills to a new or practical problem not explicitly covered in the regular experiments.

Students may choose to:

Modify or extend an existing experiment to explore additional parameters or behaviors.
 Integrate multiple concepts from the syllabus into a combined application.
 Design a mini-setup or prototype to demonstrate a principle or solve a simple engineering problem.
 Perform a comparative study or performance analysis of a circuit/system/component.

Student Activities for Self-Learning

Week	Self-Learning description	Hours
Module I		
1	Preparation of rough record for Experiment 1 and writing Python programs along with their output in the fair record.	1.5
2	Preparation of rough record for Experiment 2 and writing Python programs along with their output in the fair record	1.5
3	Preparation of rough record for Experiment 3 and writing Python programs along with their output in the fair record	1.5

Module II		
4	Preparation of rough record for Experiment 4 and writing Python programs along with their output in the fair record	1.5
5	Preparation of rough record for Experiment 5 and writing Python programs along with their output in the fair record	1.5
6	Preparation of rough record for Experiment 6 and writing Python programs along with their output in the fair record	1.5
7	Preparation for Lab Exam	1.5
Module III		
8	Preparation of rough record for Experiment 7 and writing Python programs along with their output in the fair record	1.5
9	Preparation of rough record for Experiment 8 and writing Python programs along with their output in the fair record	1.5
10	Preparation of rough record for Experiment 9 and writing Python programs along with their output in the fair record	1.5
Module IV		
11	Preparation of rough record for Experiment 10 and writing Python programs along with their output in the fair record	1.5
12	Preparation of rough record for Experiment 11 and writing Python programs along with their output in the fair record	1.5
13	Preparation of rough record for Experiment 12 and writing Python programs along with their output in the fair record	1.5
14	Preparation for Lab Exam	1.5
15	Activities related to open ended experiments	1.5
Total Self-Learning hours		22.5

Learning Resources

TEXT BOOK			
Sl. No.	Title	Author	Publication
1	Introduction to Python Programming	Gowrishankar S., Veena A.	CRC Press / Taylor & Francis, 2018

REFERENCE			
Sl. No.	Title	Author	Publication
1	Python 3 for Absolute Beginners	Tim Hall, J. P. Stacey	Apress
2	Head First Python: A Brain-Friendly Guide	Paul Barry	O'Reilly Media

WEB RESOURCES		
Sl. No.	URL	Modules Covered
1	https://www.w3schools.com/python/	All
2	https://www.tutorialspoint.com/python/	All
3	https://www.geeksforgeeks.org/python-programming-language	All

Major Equipment/Instruments/Components required for a batch of 30 students

Sl. No.	Particulars	Specifications	Quantity
1	Desktop / Laptop	Basic configuration	30

Major Software required for a batch of 30 students

Sl. No.	Particulars	Specifications	Quantity
1	Python Interpreter	Python 3.x	30

Assessment Methodology - Lab

Mode	Attendance	CE	CA1	CA2	OEE	ESE
		Continuous evaluation	Practical test (first half of experiments)	Practical test (second half of experiments)	Open-ended experiment	Practical
Duration			3 hours	3 hours		3 hours

Exam mark		50	40	40	50	40
Converted to		30	15	15	10	
Marks	5	30	15		10	40
Total marks	60					40
Tentative schedule	End of semester	Every lab slot	7th week	14th week	15th week	

Scheme of Evaluation - Practical (Continuous Internal Evaluation)

Sl. No.	Criteria	Description	Marks
1	Preparation & Punctuality	Attendance, timely submission of record, pre-lab preparation, understanding of experiment objectives and theory.	10
2	Experimental Setup & Procedure	Ability to identify components/equipment, correct circuit connections/setup, systematic and safe execution of the procedure.	10
3	Observation & Data Recording	Accuracy and neatness of readings, correct use of units, tabulation, and systematic recording of results.	5
4	Analysis & Result Interpretation	Proper calculations, graphical representation, result verification, discussion, and logical conclusion.	10
5	Viva Voce / Concept Understanding	Clarity of theoretical concepts, explanation of procedure, ability to answer questions related to the experiment.	10
6	Workmanship, Discipline & Teamwork	Laboratory discipline, care of instruments, teamwork, attitude, and safety practices.	5
Total			50

Scheme of Evaluation - Practical Test & End Semester Evaluation

Category	Things to evaluate	Marks
Write-up / Procedure (before experiment)	Aim, circuit diagram/flowchart, stepwise procedure.	10
Experiment Setup & Execution	Correct circuit connections / coding / setup. Handling of instruments/software. Accuracy of execution.	10
Observation & Result / Output	Proper tabulation of readings. Calculations/graphs/program output. Correctness of result / expected outcome.	8
Viva Voce	Conceptual understanding of experiment. Related theoretical knowledge.	8
Record	Completion & neatness of practical record. Proper certification by faculty.	4
Total		40

Scheme of Evaluation - Open-ended experiment

Category	Things to evaluate	Marks
Originality and Relevance of the Idea	Assesses how creative, innovative, and relevant the chosen experiment is to the course objectives.	10
Clarity of Objectives and Experimental Plan	Evaluates how clearly the student defines the aim, scope, and systematic plan of the experiment.	10
Correctness of Execution and Data Recording	Checks the accuracy, safety, and neatness in performing the experiment and recording observations.	10
Analysis, Interpretation, and Presentation of Results	Measures the student's ability to analyze data, interpret outcomes, and present results logically.	10
Teamwork and Innovation Demonstrated	Judges the level of collaboration, initiative, and creativity shown during the experiment.	10
Total		50