

Maharashtra State Board of Technical Education, Mumbai

Laboratory Plan (LP-PR)/ Course Information Sheet (CIS)

Academic Year: 2025-26

Institute Name: K. K. Wagh Polytechnic, Nashik

Program and Code: Computer Technology (CM)

Course Name: Python Programming (PWP)

Class: SYCM-Mac **Semester:** 4th **Scheme:** K

Date: 13/12/2025

Institute Code: 0078

Course Code & Abbr.: 314004 (PWP)

Course Index: CI404 **Learning Hrs:** 64

Name of Faculty: Mr. G. R. Shinde

K-2

● Teaching-Learning & Assessment Scheme:

Course Title	Course Code / Abbr	Course Category	Learning Scheme						Credits	TH Paper Duration (Hrs.)	Assessment Scheme									
			Actual Contact Hrs/ Week			SLH	NLH	Theory			Based on LL & TSL Practical				Based on SL		Total Marks			
								FA TH			SA TH	Total	FA-PR		SA-PR			SLA		
			CL	TL	LL			Max			Max	Max	Min	Max	Min	Max		Min	Max	Min
			Python Programming	PWP 314004	PWP			2			-	4	-	6	3	-		-	-	-

Abbreviations: CL- Class Room Learning, TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS – Indian Knowledge System, SLA - Self Learning Assessment
Legends: @ Internal Assessment, # External Assessment, *# On Line Examination, @\$ Internal Online Examination

● Course Outcomes (COs): Theory & Practical

By learning course Python Programming (PWP-314004), the Second Year students will be able to:

CO No.	Course Outcomes (COs) / Unit Outcomes (UOs)
CO404.1(CO1)	Develop python programs using control flow statements
CO404.2(CO2)	Perform operations on various data structures in Python.
CO404.3(CO3)	Develop packages to solve given problem using python.
CO404.4(CO4)	Apply object-oriented approach to solve given problem using python
CO404.5(CO5)	Use relevant built-in python package to develop application.

● COs, Practical Laboratory Learning Outcome (LLOs) and Mapping:

Pr. No	COs	LLO	Practical -Laboratory Learning Outcome (LLO)
PR 1	CO404.1 (CO1)	LLO 1.1	Install the given Python IDE
PR 2	CO404.1 (CO1)	LLO 2.1	Write python program for performing basic input and output
PR 3	CO404.1 (CO1)	LLO 3.1	Write python program to solve given expression.
PR 4	CO404.1 (CO1)	LLO 4.1	Write python program for solving given problem using various if
PR 5	CO404.1 (CO1)	LLO 5.1	Write python program for solving given problems using a while loop.
PR 5	CO404.1 (CO1)	LLO 5.2	Write python program for solving given problem using for loop.
PR 6	CO404.1 (CO1)	LLO 6.1	Use loop control statements in python for solving given problem.
PR 7	CO404.2 (CO2)	LLO 7.1	Write python program to perform operations on list.
PR 8	CO404.2 (CO2)	LLO 8.1	Write python program to use built-in functions on list.
PR 9	CO404.2 (CO2)	LLO 9.1	Write python program to perform operations on tuple.
PR 10	CO404.2 (CO2)	LLO 10.1	Write python program to manipulate the set.
PR 11	CO404.2 (CO2)	LLO 11.1	Use built-in functions/methods on sets in python for solving given
PR 12	CO404.2 (CO2)	LLO 12.1	Write python program to perform operations on dictionary.
PR 13	CO404.3 (CO3)	LLO 13.1	Write function to solve given problem.
PR 14	CO404.3 (CO3)	LLO 14.1	Write python program to create function by selecting appropriate type of argument.
PR 15	CO404.3 (CO3)	LLO 15.1	Write python program using anonymous function.

PR 15	CO404.3 (CO3)	LLO 15.2	Write python program to use function in argument.
PR 16	CO404.3 (CO3)	LLO 16.1	Write user defined module to solve given problem.
PR 17	CO404.3 (CO3)	LLO 17.1	Select appropriate module to solve given problem.
PR 17	CO404.3 (CO3)	LLO 17.2	Use given module to solve problem.
PR 18	CO404.3 (CO3)	LLO 18.1	Write user defined package to solve given problem.
PR 19	CO404.4 (CO4)	LLO 19.1	Use numpy and matplotlib package to solve given problem.
PR 19	CO404.4 (CO4)	LLO 19.2	Select appropriate methods from numpy and matplotlib package to
PR 20	CO404.4 (CO4)	LLO 20.1	Write python program using classes and objects to solve a given
PR 21	CO404.4 (CO4)	LLO 21.1	Write a python program to initialize objects of class using various types of constructors.
PR 22	CO404.4 (CO4)	LLO 22.1	Write a python program to implement polymorphism.
PR 23	CO404.4 (CO4)	LLO 23.1	Write a python program to use data hiding concept in python.
PR 24	CO404.4 (CO4)	LLO 24.1	Select appropriate type of inheritance to solve given problem.
PR 24	CO404.5 (CO5)	LLO 24.2	Write python program using inheritance to solve given problem.
PR 25	CO404.5 (CO5)	LLO 25.1	Use panda package and its appropriate functions/methods to solve a given problem.
PR 26	CO404.5 (CO5)	LLO 26.1	Write python program to read CSV file using the panda package.
PR 27	CO404.5 (CO5)	LLO 27.1	Use appropriate packages in a python program to create GUI applications.
PR 28	CO404.5 (CO5)	LLO 28.1	Write python program to create GUI based python applications using appropriate python packages.
PR 28	CO404.5 (CO5)	LLO 29.1	Write python program to connect database.
PR 28	CO404.5 (CO5)	LLO 30.1	Write python program to display the content from database.

• **Practical/Laboratory Plan:**

Sr No	LLOs	Practical Titles	Planned Dates		Remark & Faculty Sign with Date
			From	To	
1	LLO 1.1	Install given Python IDE.	A-15/12/2025 B-16/12/2025 C-17/12/2025	A-18/12/2025 B-19/12/2025 C-20/12/2025	
2	LLO 2.1	*1. Write python program to display welcome message on screen. 2. Implement the python program to read data from user and display data on screen.	A-18/12/2025 B-19/12/2025 C-20/12/2025	A-22/12/2025 B-23/12/2025 C-24/12/2025	
3	LLO 3.1	*Implement a python programs using following operators: 1. Arithmetic 2. Relational & logical 3. Assignment 4. Bitwise 5. Membership 6. Identity	A-29/12/2025 B-26/12/2025 C-27/12/2025	A-30/12/2025 B-30/12/2025 C-31/12/2025	
4	LLO 4.1	*Implement a python program to demonstrate the use of following conditional statements: 1. if statement 2. if..else statement 3. if..elif..else statement 4. nested if statement	A-01/01/2026 B-02/01/2026 C-03/01/2026	A-05/01/2026 B-06/01/2026 C-07/01/2026	
5	LLO 5.1	*Implement a python program to demonstrate the use of following looping statements: 1. while loop	A-05/01/2026 B-06/01/2026 C-07/01/2026	A-08/01/2026 B-09/01/2026 C-10/01/2026	

		2. for loop 3. nested loop			
7	LLO 7.1	*Implement a python program to perform following operations on the List: 1. Create a List 2. Access List 3. Update List 4. Delete List	A-08/01/2026 B-09/01/2026 C-10/01/2026	A-12/01/2026 B-13/01/2026 C-15/01/2026	
8	LLO 8.1	Implement Python program to demonstrate the use of built-in functions/methods on List (Any Eight Functions/methods)	A-12/01/2026 B-13/01/2026 C-15/01/2026	A-15/01/2026 B-16/01/2026 C-17/01/2026	
9	LLO 9.1	*Implement python program to perform following operations on the Tuple: 1. Create a Tuple 2. Access Tuple 3. Print Tuple 4. Delete Tuple 5. Convert tuple into list and vice-versa	A-15/01/2026 B-16/01/2026 C-17/01/2026	A-19/01/2026 B-20/01/2026 C-21/01/2026	
10	LLO 10.1	*Implement a python program to perform following operations on the Set: 1. Create a Set 2. Access Set 3. Update Set 4. Delete Set	A-22/01/2026 B-23/01/2026 C-24/01/2026	A-27/01/2026 B-28/01/2026 C-28/01/2026	
11	LLO 11.1	Implement a python program to perform following functions on Set: 1. Union 2. Intersection 3. Difference 4. Symmetric Difference	A-29/01/2026 B-30/01/2026 C-31/01/2026	A-02/02/2026 B-03/02/2026 C-04/02/2026	
12	LLO 12.1	*Implement a python program to perform following operations on the Dictionary: 1. Create a Dictionary 2. Access Dictionary 3. Update Dictionary 4. Delete Dictionary 5. Looping through Dictionary 6. Create Dictionary from list	A-02/02/2026 B-03/02/2026 C-04/02/2026	A-05/02/2026 B-06/02/2026 C-07/02/2026	
13	LLO 14.1	*Implement user defined function for given problem: 1. Function positional/required argument 2. Function with keyword argument 3. Function with default argument 4. Function with variable length argument	A-05/02/2026 B-06/02/2026 C-07/02/2026	A-09/02/2026 B-10/02/2026 C-11/02/2026	
14	LLO 16.1	Write a python program to create and use a user defined module for a given problem.	A-09/02/2026 B-10/02/2026 C-11/02/2026	A-12/02/2026 B-12/02/2026 C-14/02/2026	
15	LLO 17.1	Write a python program to demonstrate the use of following module: 1. math module 2. random module 3. os module	A-12/02/2026 B-12/02/2026 C-14/02/2026	A-16/02/2026 B-17/02/2026 C-18/02/2026	
16	LLO 18.1	*Write python program to create and use a user defined package for a given problem.	A-16/02/2026 B-17/02/2026 C-18/02/2026	A-20/02/2026 B-21/02/2026 C-21/02/2026	
17	LLO 19.1	Write a python program to use of numpy package to perform operation on 2D matrix.	A-20/02/2026 B-21/02/2026 C-21/02/2026	A-23/02/2026 B-24/02/2026 C-25/02/2026	

		Write a python program to use of matplotlib package to represent data in graphical form.			
18	LLO 20.1	*Develop a python program to perform following operations: 1. Creating a Class with method 2. Creating Objects of class 3. Accessing method using object	A-23/02/2026 B-24/02/2026 C-25/02/2026	A-26/02/2026 B-27/02/2026 C-28/02/2026	
19	LLO 21.1	*Write a python program to demonstrate the use of constructors: 1. Default 2. Parameterized 3. Constructor Overloading	A-02/03/2026 B-04/03/2026 C-04/03/2026	A-05/03/2026 B-06/03/2026 C-07/03/2026	
20	LLO 22.1	*Implement a python program to demonstrate 1. Method Overloading 2. Method Overriding	A-05/03/2026 B-06/03/2026 C-07/03/2026	A-09/03/2026 B-10/03/2026 C-11/03/2026	
21	LLO 24.1	*Write a python program to implement 1. Single inheritance 2. Multiple Inheritance 3. Multilevel inheritance	A-09/03/2026 B-10/03/2026 C-11/03/2026	A-12/03/2026 B-13/03/2026 C-14/03/2026	
22	LLO 25.1	*Implement Python program to perform following operations using panda package: 1. Create Series from Array 2. Create Series from List 3. Access element of series 4. Create DataFrame using List or dictionary	A-12/03/2026 B-13/03/2026 C-14/03/2026	A-16/03/2026 B-17/03/2026 C-18/03/2026	
23	LLO 26.1	Implement python program to load a CSV file into a Pandas DataFrame and perform operations.	A-16/03/2026 B-17/03/2026 C-18/03/2026	A-23/03/2026 B-24/03/2026 C-25/03/2026	
24	LLO 27.1	*Write python GUI program to import Tkinter package and create a window and set its title.	A-23/03/2026 B-24/03/2026 C-25/03/2026	A-30/03/2026 B-27/03/2026 C-28/03/2026	
25	LLO 29.1	Write program to create a connection between database and python.	A-30/03/2026 B-27/03/2026 C-28/03/2026	A-02/04/2026 B-27/03/2026 C-01/04/2026	
26	BS*	File Handling in python	A-02/04/2026 B-27/03/2026 C-01/04/2026	A-02/04/2026 B-27/03/2026 C-01/04/2026	

Note: -Out of above suggestive LLOs -'*' Marked Practicals (LLOs) Are mandatory.

-Minimum 80% of above list of lab experiment are to be performed.

-Judicial mix of LLOs are to be performed to achieve desired outcomes.

*BS-Beyond syllabus

❖ Formative & Summative Assessment Criteria:

• Practical Assessment:

- Formative Assessment (FA) of each practical/experiment will be performed progressively for 50 marks. The assessment will be performed based on the Regularity in Practical Performance, Tool Selection Ability, Use of Appropriate tool to perform the Identified tasks, Algorithm/Solution developed, Quality of output achieved, Answer to sample questions and Submit report in total time.
- Final Term Work (FA-PR) of 50 marks is calculated based on scores in Formative Assessment for all practicals/experiments as:
 - Term Work Marks (FA-PR)** = ((Sum of Total Marks Scored in FA x Max Marks by Scheme) / (Total Number of Experiments)) x (Max marks for each Practical))
- A Summative (comprehensive) Assessment (SA-PR) of Practical will be performed as End Semester Examination (ESE). The SA-PR will be for 50 Marks with MSBTE guidelines at the end of semester. The schedule of MSBTE Practical ESE will be display on Notice board prior to examination.

- **References:**

1. Suggested Books for Reference:

Sr. No	Author	Title of the Book	Publisher
1.	R. Nageswara Rao	Core Python Programming	Dreamtech Press, ISBN-13:9789390457151
2.	Mark Lutz	Learning Python	O'Reilly Media, Inc, ISBN: 9781449355739
3.	David Amos, Dan Bader, Joanna Jablonski, Fletcher Heisler	Python Basics	Real Python, ISBN-13: 9781775093329
4.	Dr. Jeeva Jose	Taming Python by Programming	Khanna Book Publishing CO(P) LTD, New Delhi, ISBN: 9789386173348
5.	Rupesh Nasre	Python Programming	AICTE, ISBN 9788195986354 [Online available on AICTE e-Kumbh]

2. Learning Websites & Portals:

Sr. No	Website /Portal Link/URL	Description
1	https://ekumbh.aicte-india.org/allbook.php	Python Programming
2	https://python-iitk.vlabs.ac.in/	Python Programming Lab
3	https://spoken-tutorial.org/watch/Python+3.4.3/Input-output/ English/	Introduction to Python and control flow statements, Data Structures in Python, Function and module
4	https://onlinecourses.nptel.ac.in/noc19_cs41/preview	Python Programming Course
5	https://infyspringboard.onwingspan.com/web/en/app/toc/1_ex_auth_0130944397935001602592_shared/overview	Python for Beginners
6	https://www.geeksforgeeks.org/python-gui-tkinter/	Python GUI Programming
7	https://www.w3schools.com/python/python_mysql_getstarted.asp	Python MySQL Database Connectivity
8	https://www.tutorialspoint.com/python_pandas/index.htm	Python pandas package
9	https://www.programiz.com/python-programming/object-oriented-programming	OOP using Python

3. URLs of referred YouTube Videos:

Sr. No	URL/YouTube Link	Topic/ Description
1	https://youtu.be/t2_Q2BRzeEE?si=vjiludUWTR5BVoSK	Variables & Data Types
2	https://youtu.be/IIId8IDP6TU?si=mKNMEfsowAdOAsIA	Strings & Conditional Statements
3	https://youtu.be/gOMW_n2-2Mw?si=s-vV9mJBxwldNdLx	Python lists, sets, and tuples
4	https://youtu.be/f2RATcdPcrE?si=7Fdaq-qJhvlf8eq-	Introduction to Lists in Python
5	https://youtu.be/fNRUxURBgtk?si=-ZpOoi2ACX12QHAI	Python Programming Tutorial - if else Statements
6	https://youtu.be/te6OVQw3ylk?si=7xXZc1j_aUHGfGJS	Python Programming Tutorial - for loop
7	https://youtu.be/qD610d5i1Qo?si=IXjllMSlea0PYH_m	Python Programming Tutorial - While loop
8	https://youtu.be/EPLz5pKl_jU?si=6E-8xyxJAFz-qBbk	Object Oriented Programming Python
9	https://youtu.be/L6BoHn8NdX4?si=y2VLDGB1F6ufqy3F	Modules in Python
10	https://youtu.be/Sx1Hjr67xO0?si=Gg-A7CPiM80syufy	File Handling in Python

4. Tools to Use for Teaching-Learning, Assessment and Evaluation:

- **Google Classroom** – It will be used to/for:
 - Organized Sharing of the Learning material such as PPTs, eNotes, Question Banks, Sample Solutions with students by class.
 - Conduction of the MCQ Tests and its evaluation.
 - Online sharing of Assignments and the Assessment of Assignments.
 - Monitor the students response and progress.
- **MKCL ERA LMS:** – The use of MKCL ERA LMS is/for:
 - Sharing by the Class, the Learning material such as PPTs, eNotes, Video Links by the Units
 - Sharing of Question Banks, Sample Solutions with students by class.
 - Conduct the Unit wise Quiz and perform evaluation of students.
 - Online Conduction of the Tests/Assignments and its assessment.
 - Using this detailed student's reports about his/her performance can be made available.

Mr. G. R. Shinde
(Faculty Name & signature)

Prof. M. P. Bhosale
(HOD-Computer Tech. Dept.)

CC-

1. Lab File
2. PWP - 314004 Course File
3. Notice Board / ERP
4. Institute Website / CIAAN Coordinator
5. Progressive Assessment