

Maharashtra State Board of Technical Education, Mumbai
LABORATORY PLAN (LP)
Academic Year: 2024-25

K-2

Date: 15/12/2025

Institute Name & Code: K. K. Wagh Polytechnic, Nashik-3 (0078)

Class: FYCM-Lin

Program and Code: Computer Technology (CM)

Course Index: CO203

Course Name: Programming in C (PIC)

Course Code & Abbr.: 312303 (PIC)

Total Hrs: 56

Semester: IInd

Scheme: K

Name of Faculty: Mrs.M.A.Shaikh /Mrs.S.S.Gaikwad

● **Teaching and Examination Scheme:**

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Paper Duration	Assessment Scheme										
				Actual Contact Hrs/Week			SLH	NLH			Theory				Based on LL & TSL Practical				Based on SL		Total Marks
				CL	TL	L L					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
													Max	Min	Max	Min	Max	Min	Max	Min	
312303	PROGRAMMING IN C	PIC	AEC	4	1	4	1	10	5	3	30	70	100	40	50	20	50#	20	25	10	225

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**

FYCM-Lin students will be able to achieve & demonstrate the following COs on completion of course based learning

CO No.	Course Outcomes
CO203.1(CO1)	Develop 'C' programs using input-output functions and arithmetic expressions.
CO203.2(CO2)	Write simple 'C' programs using branching and looping statements.
CO203.3(CO3)	Implement arrays and structures using 'C' programs.
CO203.4(CO4)	Develop 'C' programs using user defined functions.
CO203.5(CO5)	Develop 'C' programs using pointers

● **Laboratory Learning Outcome (LLO)**

LLO No.	Title of LLO
LLO 1.1	Write logical steps for given program flow
LLO 1.2	Write the standard English like statements for programming flow of given problem statement

LLO 2.1	Write Simple C program using constant and variables
LLO 2.2	Use the arithmetic operators for developing C Program
LLO 3.1	Use Arithmetic operators in C Program
LLO 4.1	Write code for type casting in C
LLO 5.1	Write C code for displaying formatted output with comments wherever applicable.
LLO 6.1	Use Relational and logical operators in C to solve given problem
LLO 6.2	Write C program using Relational and logical operators for solving given problem
LLO 7.1	Use logical operators in given expressions
LLO 8.1	Write expressions using bitwise operators in given problem statement
LLO 9.1	Write the syntax for various if statements
LLO 9.2	Write C program for any problem using If statements
LLO 10.1	Write syntax of if.. else statements
LLO 11.1	Write syntax of Switch statement to solving given problem
LLO 12.1	Write C program using Switch statement.
LLO 13.1	Implement iterative solution to problem using while and do - - while loop
LLO 14.1	Write the syntax for statement.
LLO 14.2	Write C code for solving given problem using for loop
LLO 15.1	Write syntax for a while and do ... while loop
LLO 15.2	Write syntax for 'for' loop
LLO 16.1	Declare and initialize the Array.
LLO 16.2	Write C program for implementation of one dimensional array.
LLO 17.1	Declare and initialize two dimensional Array.
LLO 17.2	Write C program for implementation of two dimensional array
LLO 18.1	Declare character array as Strings in C
LLO 18.2	Write C programs for print string operations without using string handling functions
LLO 19.1	Declare ,define and access structure variables
LLO 20.1	Write C programs using Array of Structure
LLO 21.1	Use built-in library functions in C programs
LLO 22.1	Write C programs using user defined functions

LLO 23.1	Write Recursive functions in C.
LLO 24.1	Declare and initialize pointer variables
LLO 24.2	Write C program to access variables using pointers.
LLO 25.1	Perform arithmetic operations using pointers

● **Practical Plan:**

PR No	Relevant COs	Practical - Laboratory Learning Outcome (LLO)	Practical Titles	Planned Dates		Actual Date of conduction	Remarks/ Assessment Date with Staff sign
				From	To		
1	CO1	LLO 1.1 LLO 1.2	Install and study the C programming environment	A-17\12\2025 B-15\12\2025 C-16\12\2025	A-20\12\2025 B-18\12\2025 C-19\12\2025		
2	CO1	LLO2.1 LLO2.2	Implement C programs using Constants and Variables	A-24\12\2025 B-22\12\2025 C-23\12\2025	A-27\12\2025 B-29\12\2025 C-26\12\2025		
3	CO1	LLO 3.1	Implement C programs using arithmetic operators to solve given arithmetic operations	A-31\12\2025 B-1\1\2026 C-30\12\2025	A-3\1\2026 B-5\1\2026 C-2\1\2026		
4	CO1	LLO 5.1	Write well commented C programs using formatted Input / Output statements.	A-7\1\2026 B-8\1\2026 C-6\1\2026	A-10\1\2026 B-12\1\2026 C-9\1\2026		
5	CO1 CO2	LLO 6.1 LLO 6.2	Implement minimum two C programs using Relational and conditional operator.	A-17\1\2026 B-15\1\2026 C-13\1\2026	A-21\1\2026 B-19\1\2026 C-16\1\2026		
6	CO1 CO2	LLO 7.1	Implement minimum two C programs using Logical Operators	A-24\1\2026 B-22\1\2026 C-20\1\2026	A-28\1\2026 B-29\1\2026 C-23\1\2026		
7	CO2	LLO 9.1 LLO 9.2	Implement minimum two C programs using simple If statement and if-else statement.	A-28\1\2026 B-29\1\2026 C-23\1\2026	A-31\1\2026 B-2\2\2026 C-27\1\2026		
8	CO2	LLO 10.1	Implement minimum two C programs using nested If .Else statement and if.. else if ladder	A-31\1\2026 B-2\2\2026 C-27\1\2026	A-4\2\2026 B-5\2\2026 C-30\1\2026		
9	CO2	LLO 11.1	Develop C program using Switch statements	A-4\2\2026 B-5\2\2026	A-7\2\2026 B-9\2\2026		

				C-30\1\2026	C-3\2\2026		
10	CO2	LLO 12.1	Implement C program to print English Calendar months as per given number	A-7\2\2026 B-9\2\2026 C-3\2\2026	A-11\2\2026 B-12\2\2026 C-6\2\2026		
11	CO2	LLO 13.1	Implement minimum two C programs using 'while' loop and 'do...while' loop statements.	A-11\2\2026 B-12\2\2026 C-6\2\2026	A-14\2\2026 B-16\2\2026 C-10\2\2026		
12	CO2	LLO 15.1 LLO 15.2	Implement C Programs to print various patterns using loops.	A-14\2\2026 B-16\2\2026 C-10\2\2026	A-18\2\2026 B-23\2\2026 C-13\2\2026		
13	CO2 CO3	LLO 16.1 LLO 16.2	Implement C programs using One Dimensional Array	A-18\2\2026 B-23\2\2026 C-13\2\2026	A-21\2\2026 B-26\2\2026 C-17\2\2026		
14	CO3	LLO 17.1 LLO 17.2	Implement C programs using Two Dimensional Array	A-21\2\2026 B-26\2\2026 C-17\2\2026	A-25\2\2026 B-2\3\2026 C-20\2\2026		
15	CO3	LLO 18.1 LLO 18.2	Implement C program to perform following operations without using standard string functions.	A-25\2\2026 B-2\3\2026 C-20\2\2026	A-4\3\2026 B-9\3\2026 C-27\2\2026		
16	CO3	LLO 20.1	Implement ' Array of Structure' in C	A-7\3\2026 B-12\3\2026 C-3\3\2026	A-11\3\2026 B-16\3\2026 C-6\3\2026		
17	CO4	LLO 21.1	Implement C program using in-built mathematical and string functions.	A-11\3\2026 B-16\3\2026 C-6\3\2026	A-14\3\2026 B-23\3\2026 C-10\3\2026		
18	CO4	LLO 22.1	Implement C program to demonstrate User defined Functions	A-14\3\2026 B-23\3\2026 C-10\3\2026	A-18\3\2026 B-26\3\2026 C-13\3\2026		
19	CO5	LLO 24.1 LLO 24.2	Implement C Program to print addresses and values of variables using Pointer.	A-18\3\2026 B-26\3\2026 C-13\3\2026	A-25\3\2026 B-30\3\2026 C-17\3\2026		
20	CO5	LLO 25.1	Implement C Programs to perform arithmetic operations using Pointer.	A-25\3\2026 B-30\3\2026 C-17\3\2026	A-28\3\2026 B-2\4\2026 C-20\3\2026		

● **Practical wise CO Mapping:**

Practical No.	CO203.1	CO203.2	CO203.3	CO203.4	CO203.5
PR. No. 1	✓				
PR. No. 2	✓				
PR. No. 3	✓				
PR. No. 4	✓				

PR. No. 5	✓				
PR. No. 6	✓	✓			
PR. No. 7	✓	✓			
PR. No. 8	✓	✓			
PR. No. 9		✓			
PR. No. 10		✓			
PR. No.11		✓			
PR. No.12		✓			
PR. No.13		✓			
PR. No. 14	✓	✓			
PR. No. 15		✓			
PR. No.16		✓			
PR. No. 17			✓		
PR. No 18			✓		
PR. No 19			✓		
PR No. 20			✓		
PR. No 21				✓	
PR. No 22				✓	
PR. No 23				✓	
PR. No 24					✓
PR. No 25					✓

- **Learning Learning Assessment (Theory):**

A. Formative assessment (FA-TH)

For the Formative Assessment, Two MSBTE class tests will be conducted during semester each of 30 Marks. Final score of Formative Assessment out of 30 will be the average of 2 class Tests.

B. Summative Assessment (SA-TH)

As Summative Assessment an end semester examination for 70 Marks will be conducted by

MSBTE after the completion of the term. The schedule of examination will be given by MSBTE.

Final Score out of 100 Marks will be derived as the total score of

(SA-TH + FA-TH [Average of class test marks]) i.e. (70+30) =100

- **Learning Assessment (Practical):**

- A. Formative assessment (FA-PR)**

- For the Formative Assessment (FA-PR) each experiment will be assessed out of 50 marks. Practical will be assessed considering 60% weightage to process and 40% weightage to product.
 - Final term work(FA-PR) of 50 marks is calculated based on scored in Formative Assessment for each experiment
$$\text{Term Work Marks} = (50 * \text{Total Marks Obtained in FA-PR}) / (50 * \text{Total Number of Experiments})$$

- B. Summative Assessment (SA-PR)**

- A comprehensive Final External Practical examination (SA-PR) of 50 Marks will be conducted by MSBTE at the end of semester.
 - The schedule of MSBTE Practical Examination will be display on Notice board prior to examination. The schedule of examination will be given by MSBTE

- **Self-Learning(SLA):**

Self-learning Activities (SLA) includes micro project / assignment / other activities related to\ subject and it will be evaluated out of 25 Marks

- **Laboratory Equipment / Instruments / Tools / Software required**

- 1 . Computer system - (Any computer system with basic configuration)
2. 'C' Compiler – Turbo 'C', Developer C/ C++, CodeLite, Sublime Text, Visual Studio

- **References:**

- Suggested Learning Materials / Books:

Sr. No	Author	Title	Publisher with ISBN Number
1	E. Balaguruswamy	Programming in ANSI 'C'	Mcgraw Hill Publications ISBN 0070534772
2	Yashwant Kanetkar	Let us 'C'	BPB Publication ISBN 9788183331630
3	David Griffiths, Dawn Griffiths	Head First C	O'Reilly Media, Inc. ISBN: 9781449345013
4	Herbert Schildt	The Complete Reference 'C'	Mcgraw-Hill Osborne Media, 3 rd Edition, ISBN 10

- **Learning Websites & Portal**

Sr. No	URL
1	https://nptel.ac.in/courses/106104128
2	https://jsommers.github.io/cbook/control.html
3	https://www.learn-c.org/en/Functions

4	https://www.simplilearn.com/tutorials/c-tutorial/pointersin
5	https://www.w3schools.com/c/
6	https://www.javatpoint.com/c-programming-languagetutorial
7	https://www.programiz.com/c-programming
8	https://www.programiz.com/c-programming/onlinecompiler/

- **Video reference URL**

Sr. No	URL
1	https://youtu.be/irqbmMNs2Bo?si=7PzhwgbTgOcEHCui
2	https://youtu.be/7Dh73z3icd8?si=3wBvFCClzyfumdc
3	https://youtu.be/rQoqCP7LX60?si=NH3gFKBvhcw7dLT9
4	https://youtu.be/KnvbUiSxvbM?si=YP-377HDwNF1k89N
5	https://youtu.be/EjavYOFoJJ0?si=rFDyGe4cIFlU1Yvh
6	https://youtu.be/XsM8y9g4X2Y?si=Qi18WPn8AGCPM-wV

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