FACULTY OF COMPUTER SCIENCE
Master of Computer Application (Sem-I)
In Effect from Academic Year 2023-24

Branch Name:	MCA
Program Code:	CS201
Course Name :	Programming with C Practical
Course Code :	3CS2010101P
Pre-requisite Course:	-NIL-

Course Objective:

1. To introduce the basics of structured programming using the C language.
2. To become familiar with flowchart and algorithm development.
3. To give a clear idea of different strategies of basic programming with C like Looping, Decision Making, Array, Structure, Function, Pointer, etc. to solve real life problems.

Teaching Scheme (Hours Per Week)				Evaluation Scheme (Marks)				
				Theory		Practical		
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total
-	-	3	3	-	-	25	25	50

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

Sr.No. **Practical Exercise**

1. **Draw a Flow chart and write an Algorithm for following Problems**.
   1.1 Write an algorithm and flowchart for calculating the difference, and the quotient the product of two given numbers.
   1.2 Write an algorithm and flowchart for converting centimeters to meters.
   1.3 Write an algorithm and flowchart for finding the maximum from 3 numbers.
   1.4 Write an algorithm and flowchart for finding the sum of N Numbers.
   1.5 Write an algorithm and flowchart for Solving Quadratic Equations.

2. **Usage of Operators**
   2.1 Write a program to print a “Hello World” message.
   2.2 Write a program to print Name, Address and Birth Date.
   2.3 Write a C Program that demonstrates implicit and explicit conversion.
   2.4 Write a C Program to swap two numbers.
   2.5 Write a C Program to make Simple Calculator.
   2.6 Write a program to add, multiply and divide two integers and float numbers.

3. Decision Making Statements

3.1 Write a C Program to find the maximum and minimum of three numbers.
3.2 Write a C Program to check whether a given number is even or odd.
3.3 Write a C Program to check whether a year is a leap year or not.
3.4 Write a C Program to make a choice based Simple Calculator.
3.5 Write a C Program to find if a given number is negative, positive or zero.
3.6 Write a C Program to demonstrate switch case statements.

4. Looping Structures

4.1 Write a program to display a multiplication table.
4.2 Write a program to find the sum of all integers greater than 100 & less than 200 and are Divisible by 5.
4.3 Write a program to evaluate the following series.

- 1+2+3+4+5+…..+N
- 1+3+5+7+……..+N
- 1-2+3-4+5-3+……±N
- 1 + 1/2 + 1/3 + 1/4 +……+ 1/N
- $1^2 + 2^2 + 3^2 + \ldots\ldots + N^2$

4.4 Write a C Program to find factorial numbers using Loop.
4.5 Write a C Program to reverse given numbers.
4.6 Write a C program to (a) count digits (b) find the sum of digits of a given number.
4.7Write a C program to convert each digit of a number into words.
4.8 Write a C program to print Fibonacci series of given range.
4.9 Write a C program to prepare a currency converter.

4.10 Write a c program to check given number is

- perfect number or not
- Armstrong number or not
- Prime number or not
- Strong number or not
- Odd or even
- Palindrome number or not

4.11 Write a C Program for following Patterns.

```
*
* *
* * *
* * * *
```

```
1 2 3 4 5
 2 3 4 5
  3 4 5
   4 5
    5
```

```
AAAAA
 BBBB
  CCC
   DD
    E
```

```
1
 0 1
1 0 1
 0 1 0 1
```

5. Arrays

5.1 Write a C Program to make a sum of 10 numbers using an Array.
5.2 Write a C Program to find the maximum of given array elements.
5.3 Write a C Program to make addition of two arrays' elements.
5.4 Write a C Program to scan and print two dimensional array elements.
5.5 Write a C Program to search an element from an array.
5.6 Write a C Program to sort array elements in ascending and descending order.
5.7 Write a C Program to delete specific elements from the array.
5.8 Write a C Program to make matrix multiplication of two 3*3 matrixes.

6. Functions

6.1 Write a C Program and make a Function to Convert Fahrenheit to Celsius.
6.2 Write a C Program and make Function to Find Sum and Average of three Numbers.
6.3 Write a C Program and Make Function for each operation of Simple Calculator.
6.4 Write a C Program and make a recursive function for Factorial.
6.5 Write a C Program and that demonstrates use of nesting of Function.
6.6 Write a function prime that returns 1 if its argument is a prime no. and returns 0 otherwise.

6.7 Write a program to add first n numbers.

6.8 Write a function which returns 1 if the given number is palindrome otherwise returns 0.

6.9 Write a function that will scan a character string passed as an argument and convert all lower-case characters into their upper-case equivalent.
6.10 Write a function to reverse the string.

6.11 Write a program that searches an item from an array of strings.

7. String

7.1 Write a program that will read a text and count all occurrences of a particular word.
7.2 Write a program that will read a string and rewrite it in the alphabetical order. i.e. the word STRING should be written as GINRST.

7.3 Write a program that appends the one string to another string.

7.4 Write a program that finds a given word in a string.

8. Structure

8.1 Define a structure called cricket that will describe the following information:

Player name
Team name
Batting average

Using cricket, declare an array player with 50 elements and write a program to read the information about all the 50 players and print a team-wise list containing names of player with their batting average.

8.2 In a program declare following structure member: name, code, age, weight and height. Read all members of the structure for 100 persons and find list of persons with all related data whose weight > 50 and height > 40 and print the same with suitable format and title.

9 Pointer

9.1 Write a program using pointers to read an array of integers and print its elements in reverse order.

9.2 Write a function to calculate the roots of the quadratic equation. The function must use two pointer parameters, one to receive the coefficients a, b, and c, and the other to send the roots to the calling function.

9.3 Write a function using pointers to add two matrices and to return the resultant matrix to the calling function.

10 File

10.1Write a program to read data from the keyboard and write it to a file named STUDENT. Again read the same data from STUDENT file and write it into DATA file. Same data should be displayed on the screen.

10.2 Write a program which works like a COPY command.

10.3 Write a program which works like a TYPE command.

Text Books:

1. Programming in C, Pradip Dey Manas Ghosh, Publisher – Oxford

Reference Books:

1. Programming in ANSI C – E Balagurusamy, TMH publication, latest Edition
2. Let us "C" – KanetkarYashwant, BPB Publication, Latest Edition.
3. Mastering C, Venugopal& Prasad, Publisher – Tata McGraw Hill

List of Open Source Software/learning website:

1. **https://www.tutorialspoint.com**
2. **https://www.w3schools.com**
3. **https://www.javatpoint.com**

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom'sTaxonomyLevel
CLO1	To have fundamental knowledge on flowcharts and algorithm	2 Understanding
CLO2	To understand the basic terminology used in computer programming using C	1 Remembering 2 Understanding
CLO3	To Study, analyze and understand logical structure of a computer program, and different construct to develop a program in 'C' language	2 Understanding, 3 Applying, 4 Analyze
CLO4	To write, compile and debug programs in C language	3,4,5,6 Applying, Analyze, Evaluate, Creating
CLO5	To design programs involving decision structures, loops and functions	3,4,5,6 Applying, Analyze, Evaluate, Creating

CLO6	To design programs involving structure, pointer and file. .	3,4,5,6 Applying, Analyze, Evaluate, Creating

Mapping CLOs with POs & PSOs

Course LearningOutcomes	ProgramOutcomes(POs)												Program SpecificOutcomes (PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1	L	H	H										L	L
CLO2	M	L	L					M					L	L
CLO3	M	H	H	M	L			M			L	L	H	M
CLO4	M	H	H	M	L			M			L	L	H	M
CLO5	M	H	H	M	L			M			L	L	H	M
CLO6	M	H	H	M	L			M			L	L	H	M

H:High, M:Medium, L:Low