Part A : Introduction				
Program: DIPLOMA		**Class : UG**	**Year: II year**	**session :2022-2023**
Subject : Computer Application				
1.	**Course Code**	**S2-COAP1G**		
2.	**Course Title**	**Basic Programming in 'C'**		
3.	**Course Type**	**Generic Elective**		
4.	**Pre-requisite**	This course is based on programming so the students must have the basic knowledge of computers and its basic operations.		
5.	**Course Learning Outcomes (CLO)**	On the completion of this course student will be able - • To explore basics of C programming languages. • To approach the programming tasks using techniques learned and write pseudo-code. • To choose the right data representation formats based on the requirements of the problem. • To use the comparisons and limitations of the various programming constructs and choose the right one for the task in hand. • To identify tasks in which the numerical techniques learned are applicable and apply them to write programs, and hence use computers effectively to solve the task.		
6.	**Credit Value**	**4**		
7.	**Total Marks**	**Max. Marks: 30+70**	**Min. Passing Marks: 33**	

Part B: Content Of the Course
Programming in C language

Total No. of Lectures =60 (3 hours/lecture per week) : 3-0-0

Unit	Topics	No. of Lectures
I	Programming Fundamentals : Program Concept, C language: introduction, history of C, Over view of procedural programming and object oriented programming, structure of C program, Algorithms, Flow Charts - Symbols, Rules for making Flow chart, Types of flowchart, techniques of problem solving : Programming Techniques – Top down, Bottom up, Modular, Structured - Features, Merits & Demerits, Programming Logics- Simple Branching, Looping, Recursion, Cohesion & Coupling, Programming. Testing & Debugging & their Tools. How to compile and run a C program- steps and detailed procedure.	12

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II	Programming in C including features of 'C', C tokens, Variables, Expressions, Identifiers, Keywords, Data Types, Constants, Operator: Arithmetic, Logical, Relational, Conditional and Bit wise Operators, Precedence and Associatively of Operators, evaluations of expressions, Type conversions in expressions, Basic input/output and library functions: Single character input/output i.e. getch(), getchar(), getche(), puts(), putch() and putchar(), Formatted input output i.e. printf() and scanf().	12
III	Decision Making branching: if-else, switch, conditional operator &goto statements If statement, If.....Else statement, Nesting of If....Else Statement, else if ladder, ?: operator, goto statement, Switch statement, Compound statement, Looping : Introduction, while statement, do statement, for statement, Break and Continue, do-while loops.	12
IV	Functions: Utility of functions, Call by value & call by reference, categories of functions (i) Introduction (ii) User defined function and library functions, Categories of User defined functions , Return values and their types, Calling a function, Void functions, Differentiating between declaration and definition of function argument/parameters in functions, Functions with variable number of arguments, recursion, Function arguments, Return values and nesting of function, Recursion, Calling of functions, Scope and life of variables - local and global variable, Storage class - auto, extern, static, register.	12
V	Arrays : what is array, declaring initializing , accessing individual elements in an array, manipulating array elements using loops, 2D and 3D arrays. String: declaration, string functions – strcat, strcpy, strcmp, strlen, strstr. Pointers : Overview of Pointers. Preprocessor, #define, defining functions like macros, #error,#include, conditional compilation directives i.e. #if, #else, #elif and #ifdef & undef Structures : Structure definition, declaring and initializing Structure variables, the structure tag, period operator , accessing Structure members, Copying & Comparison of structures, the concept of structure of structure , array of structure, arrow operator and nesting of structure, Unions : initialization and use of it in a program. File Management: Introduction.	12

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	Part C: Learning Resources	
	Suggested Digital Platforms, Web links 1. https://www.programiz.com/c-programming/c-if-else-statement 2. https://javatutoring.com/control-statements-in-c/ 3. https://www.programiz.com/c-programming/c-arrays 4. https://www.tutorialspoint.com/cprogramming/c_structures.htm 5. https://beginnersbook.com/2014/01/c-functions-examples/ 6. https://www.javatpoint.com/data-types-in-c 7. http://www.mphindigranthacademy.org/ **Suggested Readings:** 1. The C Programming Language : B.W. Kernighan & D.M. Ritchie 2. The Sprit of C : Cooper, Mullish 3. Programming in ANSI-C : E. Balagurusami, TMH Publication 4. Programming in C : Schaum Outline, McGraw-Hill 5. Let us C : Kanetkar Y 6. An introduction to C programming – Amit Saxena, Anamaya Publishers, New Delhi 7. Books published by M.P. Hindi Granth Academy, Bhopal	

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:
Maximum Marks : 100
Continuous Comprehensive Evaluation (CCE) : 30 marks University Exam (UE) : 70marks

Internal Assessment : Continuous Comprehensive Evaluation (CCE):30	Class Test Assignment/Presentation	Total 30
External Assessment : University Exam Section: 70 Time : 03.00 Hours	**Section(A)** : Objective Questions **Section (B) :** Short Questions **Section (C) :** Long Questions	Total 70

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Part- A
Introduction

Program: DIPLOMA		Class : UG II	Year: 2022	session:2022-2023
Subject : Computer Application				
1.	**Course Code**	**S2-COAP1R**		
2.	**Course Title**	**Basic Programming in 'C' (Practical)**		
3.	**Course Type**	**General Elective**		
4.	**Pre-requisite(If any)**			
5.	**Course Learning Outcomes (CLO)**	On the completion of this course student will be able - • To understand how computer works and will be able to understand and visualize the inner working of computer. • To understand the syntax and semantics of the C language. • To recognize how to develop and implement a program in the C language. • To recollect various programming constructs and to develop C programs. • To acquire logical thinking, Implement the algorithms and analyze their complexity.		
6.	**Credit Value**	**2**		
7.	**Total Marks**	**Max. Marks: 30+70**	**Min. Passing Marks: 33**	

Part- B Content Of the Course
Basic Programming in 'C' (Practical)

Total No. of Labs =30 labs each of 2 hours duration (1 lab per week)

Practical Lab will be conducted based on the theory Syllabus

List of Practical

1. Write a Program to print different data types in 'C' and their ranges.
2. Write aAlgorithm & Flowchart to convert temperature from Celsius to Fahrenheit.
3. Write an algorithm & flowchart to find the smallest and largest number of among the three numbers.
4. Write a program to calculate simple and compound interest.
5. Write a C program to find the roots of a quadratic equation.
6. Write a C program to make a simple calculator using switch...case.

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	7. Write a C program to print natural numbers from 1 to n. 8. Write a C program to find the factorial of a given number. 9. Write a program in C to check a given number is even or odd using the function. 10. Write a C program to access elements of an array using pointers. 11. Write a C program to calculate the average of array elements. 12. Write a C program to store information of 10 students using structures. 13. Add two complex numbers by passing structures to a function. 14. Write a C program to find the length of a string. 15. Write a C program to reverse a string using recursion. 16. Write a C Program to find largest element in an array. 17. Write a C program to add two matrices using multi-dimensional arrays. 18. Write a C program to store information of students using structure. 19. Write a C program to Print Pyramid. 20. Write a C program to Print Patterns.	
	Part -C **Learning Resources**	
	Suggested Digital Platforms, Web links 1. https://javatutoring.com/control-statements-in-c/ 2. https://www.programiz.com/c-programming/c-arrays 3. https://www.tutorialspoint.com/cprogramming/c_structures.htm 4. https://beginnersbook.com/2014/01/c-functions-examples/ 5. https://www.javatpoint.com/data-types-in-c 6. http://www.mphindigranthacademy.org/	

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Suggested Readings:

1. The Sprit of C : Cooper, Mullish
2. Programming in ANSI-C : E. Balagurusami, TMH Publication
3. Programming in C : Schaum Outline, McGraw-Hill
4. Let us C : Kanetkar Y
5. An introduction to C programming – Amit Saxena, Anamaya Publishers, New Delhi
6. Books published by M.P. Hindi Granth Academy, Bhopal

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz		Viva Voce on Practical	
Attendance		Practical Record File	
Assignments (Charts/ Model Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)		Table work / Experiments	
TOTAL	30		70

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