COURSE TITLE	**COMPUTER PROGRAMMING**
COURSE CODE	**01CE2101**
COURSE CREDITS	**5**

Objective:

1 Students are expected to learn basics of Computer Programming which will help them to apply these concepts in day-to-day life. The course discusses various notations that required for developing algorithm and for C language, which is used in many commercial, industrial as well as industrial applications. Keeping in view wide applications of files, a special unit of files is introduced.

Course Outcomes: After completion of this course, student will be able to:

1 Understand the basic components of computer and programming concepts using flowchart and algorithms.

2 Apply programming principles using C language constructs to solve computational problems.

3 Analyze the use of arrays, strings, and functions for structured programming.

4 Demonstrate the use of pointers, dynamic memory allocation, and data structures like structures and unions.

5 Evaluate different file handling mechanisms for managing data in C programming.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
4	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Introduction** Introduction to Computer, Block Diagram of Computer, Primary Memory, Secondary Memory, CPU, ALU, Software, Types of Software, Compilers and Interpreters, Hardware, I/O Devices, Flowchart, Algorithm	6
2	**C Programming Basics** Introduction to C Programming, Structure of C program, Compilation and linking processes, Constants, Variables, Data Types, C Tokens, Expression using operators in C, Type Conversion and Type Casting	8
3	**Control Structure and Looping** Decision Making statements, Decision Making statements, Conditional operator, Looping, Entry and Exit control loops, Concept of jump, Break and continue	12

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Contents : Unit	Topics	Contact Hours
4	**Array and String** Declaration and initialization of array, Types of arrays, Sorting and matrix operation using array, Strings operations, String array, String functions	8
5	**Functions** Definition of function, Declaration of function, Call by value, Call by references,, Recursion	8
6	**Structure and Union** Need of structure data type, Structure definition, structure declaration, Structure within structure, Difference between structure and union	6
7	**Pointers and Dynamic Memory Allocation** Definition, Initialization, Pointer arithmetic, Pointer and array, Chain of pointer, DMA concepts, DMA functions, malloc(), calloc (), realloc(), free()	5
8	**File Management** Introduction to file management, File Handling function	3
Total Hours		**56**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Practical 1** Implement a basic C program for simple input/output operations	2
2	**Practical 2** Develop branching programs using if-else and switch	2
3	**Practical 3** Create looping programs using for, while, and do-while	2
4	**Practical 4** Implement programs using 1D arrays for data storage and manipulation	2
5	**Practical 5** Develop programs to perform matrix operations using 2D arrays	2
6	**Practical 6** Write string manipulation programs with basic string operations	2
7	**Practical 7** Implement function-based programs for modular programming	2
8	**Practical 8** Design programs using recursion for factorial, Fibonacci series, etc	2
9	**Practical 9** Apply structure and union concepts in C programs for data management	2
10	**Practical 10** Demonstrate pointer arithmetic and memory management	2

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
11	**Practical 11** Develop programs for dynamic memory allocation and deallocation	2
12	**Practical 12** Implement programs to manage student information using structures and unions	2
13	**Practical 13** Create menu-driven programs for real-world applications	2
14	**Practical 14** Write file handling programs for read, write, and append operations	2
Total Hours		**28**

Textbook :

1 Programming in ANSI c, E. Balagurusamy, McGraw Hill Education (India) Private Limited, 2019

References:

1 Programming with ANSI and Turbo C, Programming with ANSI and Turbo C, Ashok Kamthane, Pearson Education, 2006

2 Ansi C Programming, Ansi C Programming, Yashavant P. Kanetkar, BPB Publications, 2010

3 Programming with C, Programming with C, Byron Gottfired, Tata McGraw-Hill, 2010

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
0.00	25.00	30.00	30.00	15.00	0.00

Instructional Method:

1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

Supplementary Resources:

1 http://nptel.ac.in/courses/106104128/
2 http://nptel.ac.in/courses/106106133/
3 https://cse02-iiith.vlabs.ac.in/
4 https://www.learn-c.org/