

# Programming for Problem Solving

Course Code: CSPS100T | Credits: 3 | Total Hours: 45

## 1. COURSE OUTCOMES

CO	Outcome
C01	Define and describe various terms and concepts of C programming language. (Remembering)
C02	Compare and interpret concepts of C language syntax, data types, control statements, functions, pointers, arrays, structures, files, graphics and hardware programming using C. (Understanding)
C03	Solve problems using standard algorithms and translate pseudo-codes into C programs. (Applying)
C04	Analyze skills for choosing the right data structure, function, and data types to develop logic for solving problems. (Analyzing)
C05	Combine the various concepts and ideas learnt in C to plan, propose and develop a product. (Creating)
C06	Evaluate searching and sorting algorithms in terms of correctness and computation cost. (Evaluating)

## 2. MODULES

<b>Module I</b> 8 Hours	Introduction to programming; components of a computer system such as disks, memory, processor, operating system and compilers; idea of algorithm; steps to solve logical and numerical problems; types of algorithm: sequential, conditional and repetitive; representation of algorithm using flowchart/ pseudocode; source code; variables and data types; variables and memory locations; syntax and logical errors; object and executable code.
<b>Module II</b> 12 Hours	Operators; precedence of operators; arithmetic expressions; conditional branching and loops; writing and evaluation of conditionals; iteration and loops.
<b>Module III</b> 5 Hours	Arrays; 1-D arrays; 2-D arrays; character arrays and strings.
<b>Module IV</b> 5 Hours	Basic searching algorithms; basic sorting algorithms: Bubble Sort, Insertion Sort and Selection Sort; finding roots of equations; notion of order of complexity through example programs, without formal definition.
<b>Module V</b> 8 Hours	Functions including built-in libraries; parameter passing in functions; call by value; passing arrays to functions; idea of call by reference; recursion.
<b>Module VI</b> 7 Hours	Structures; defining structures; array of structures; idea of pointers; defining pointers; use of pointers in self-referential structures; notion of linked list without implementation; file handling.

## 3. SUGGESTED READINGS

- Byron Gottfried, *Schaum's Outline of Programming with C*, McGraw-Hill
- E. Balaguruswamy, *Programming in ANSI C*, Tata McGraw-Hill
- Brian W. Kernighan and Dennis M. Ritchie, *The C Programming Language*, Prentice Hall of India

## 4. MAPPING OF COs TO SYLLABUS

CO	Module I	Module II	Module III	Module IV	Module V	Module VI
C01	H	M				
C02	H	H				
C03		H	H			
C04	L			H	H	
C05					H	
C06						H