# 19CS1101 - PROGRAMMING FOR PROBLEM SOLVING

**(Common to all branches)**

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| Course Category: | Program Core | Credits: | 3 |
| Course Type: | Theory | Lecture-Tutorial-Practical: | 3-0-0 |
| Prerequisite: | Knowledge on computer fundamentals and basic mathematics. | Sessional Evaluation:  Univ. Exam Evaluation:  Total Marks: | 40  60  100 |
| Objectives: | Students undergoing this course are expected:   1. To learn the procedure how to develop algorithms, representations and programming development steps 2. To learn the basic building blocks of C language. 3. To understand the usage of C constructs (arrays, structures, pointers and file management) to develop various programs 4. To create better awareness how effectively utilize the concepts of C for application development | | |

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| Course Outcomes | Upon successful completion of the course, the students will be able to: | |
| CO1 | Learn the fundamentals of programming development, structure of C and basic data types |
| CO2 | Find the usage of operators in expression evaluation and construction of I/O  Statements. |
| CO3 | Acquire knowledge on various control structures to develop simple programs |
| CO4 | Explore the concept of arrays, strings and its effective utilization |
| CO5 | Understand the concepts of Pointers and Functions for exploring the dynamic  memory usage |
| CO6 | Explore the basics of Structures, Unions, File operations and supporting implementations |
| Course Content | UNIT-I  **INTRODUCTION:** Algorithms, Flow charts, Program development steps.  **FUNDAMENTALS OF C:** History, Structure of a C program, Programming rules and execution. Character set, Delimiters, C keywords, Identifiers, Constants, Variables, Rules for defining Variables, Data types, Declaration and Initialization of Variables.  UNIT-II  **OPERATORS AND EXPRESSIONS:** Introduction, Operator Precedence and Associativity, Operator Types  **INPUT AND OUTPUT IN C:** Formatted and Unformatted functions, Commonly used library functions.  UNIT-III  **DECISION STATEMENTS:** Introduction, Types of If statements, switch statement, break, continue, goto.  **ITERATIVE STATEMENTS**: while, do-while and for loops.  UNIT-IV  **ARRAYS**: Definitions, Initialization, Characteristics of an array, Array Categories.  **STRINGS:** Declaration and Initialization of strings, String handling functions.  **STORAGE CLASSES**: Automatic, External, Static and Register Variables.  UNIT-V  **POINTERS:** Fundamentals, Declaration and initialization of Pointers, Arithmetic Operations, Pointers and Arrays.  **FUNCTIONS:** Definition, Function Prototypes, Types of functions, Call by Value and Call by Reference, Recursion.  UNIT-VI  **STRUCTURES:** Definition, Declaration and Initialization of Structures.  **UNIONS:** Definition, Declaration and Initialization of Union.  **FILES:** Introduction, File Types, Basic operations on Files, File I/O, Command Line Arguments. | |
| Text Books &  References  Books | **TEXT BOOKS**   1. Programming with ANSI & TURBO C by Ashok N.Kamthane, Pearson Education 2007   **REFERENCE BOOKS**   1. A Book on C by Al Kelley/Ira Pohl, Fourth Edition, Addison-Wesley.1999 2. Let Us C by [Yashavant Kanetkar](http://www.amazon.in/s/ref%3Ddp_byline_sr_book_1?ie=UTF8&amp;field-author=Yashavant%2BKanetkar&amp;search-alias=stripbooks), BPB Publications. 3. Programming in ANSI C by Balaguruswamy 6th Edition, Tata McGraw Hill Education, 2012. | |
| E-Resources | 1. <https://nptel.ac.in/courses> 2. <https://freevideolectures.com/university/iitm> | |