**20CS1101-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 |
| **Pre-requisite:** | Knowledge on computer fundamentals and basic mathematics | **Sessional Evaluation:**  **Univ. Exam Evaluation:**  **Total Marks:** | 40  60  100 |

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| **Course Objectives** | Students undergoing this course are expected to: | |
| 1. Learn the procedure how to develop algorithms, representations and programming development steps 2. Learn the basic building blocks of C language. 3. Usage of C constructs (arrays, structures, pointers and file management) to develop various programs 4. Create better awareness how effectively utilize the concepts of C for application development | |
| **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, Flowcharts, 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.  **ITERATIVESTATEMENTS**: 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 Proto types, 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**  **&**  **Reference Books** | **TEXTBOOKS:**  1. Programming with ANSI & TURBO C by Ashok N.Kamthane, PearsonEducation2007  **REFERENCEBOOKS:**   1. A Book on C by AlKelley/IraPohl, 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%3Bfield-author=Yashavant%2BKanetkar&amp%3Bsearch-alias=stripbooks) BPB Publications. 3. Programming in ANSIC by Balaguruswamy 6thEdition, Tata McGraw Hill Education,2012. | |