****Course Handout**

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| **School Name** | : | Computer Science and Engineering |
| **Department Name** | : | Computer Science & Applications |
| **Program Name** | : | BCA |
| **Academic Year** | : | 2024-25 |
| **Semester** | : | Sem-I |
| **Course Title** | : | Programming in C |
| **Course Code** | : | BCA10030 |
| **Course Category** | : | Program Foundation |
| **Credits** | : | 5(3T+2P) |

**Instructor Information** –

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| **Course Objectives:**  A Programming in course for students aims to equip them with programming fundamentals, problem-solving skills, and practical experience using one of the most popular and versatile programming languages. |  |
| **Course Outcomes:**   After completion of this course students will   1. be familiar with fundamental programming concepts and methodology 2. be familiar with good programming practice, and apply it to upcoming courses 3. be able to apply problem-solving knowledge and skills to write well-documented, effective C programs; 4. be able to use simple data structure such as array, know their limitations to pave way for more complex data structures in the next course 5. be familiar with the concept of pointers |  |
| **Course Contents:**  **Unit 1:** **Overview of C [4]**  History  Basic structure of ‘C’ Program  Steps of compiling and executing ‘C’ Program  **Unit 2: Constants,Variables and Data types [5]**  C Tokens,Constants,variables  Data types  Declaration of Variables  Operators and Expressions  Arithmetic operators,Relational Operators  Logical Operators.Assignment operators,  Increment and Decrement operators  Conditional operators,  Bitwise operators  Operator Precedence and associativity  Mathematical Functions  **Unit 3: Decision Making and Branching [4]**  If, If- else, Nested if-else  Switch Statement  The ?: operator  Decision making and Looping  For Loop, While Loop, Do ..While Loop  Nested Loop,The odd loop  Break, Continue  **Unit 4: Arrays [4]**  Introduction  One Dimensional Arrays  Delcaration and initialization of one dimension arrays  Two Dimensional Arrays  Declaration and initialization of Two dimension arrays  Dynamic arrays  **Unit 5: Functions [4]**  Need for functions  User defined functions and Built in functions  Elements of user defined functions  Category of functions  Nesting of functions  Recursion  Passing arrays to functions  **Unit 6: Character arrays and Strings [4]**  Introduction  Declaring and Initializing String variables  Arithmetic operations on characters  String handling Functions  **Unit 7: Variables revisited [4]**  The scope ,visibility and Lifetime of variables  Storage classes  **Unit 8: Structures [4]**  Introduction  Defining a structure  Declaring structure variables  Accessing structure members  Arrays of structures  Arrays within structures  Structures and functions  **Unit 9: Pointers [4]**  Understanding pointers  The & and \* operators  Pointer arithmetic  Call by value and call by reference  Pointers and arrays  Pointers and structures  **Unit 10: File handling in C [4]**  Introduction  Basic file operations  File handling library functions  File opening modes  Opening a File  Reading from a File  Closing the File  Writing to a File  Error handling during I/O operations  **Unit 11: Introduction to Preprocessor [4]**  Features of C Preprocessor  Macro Expansion  Macros with Arguments  Macros versus Functions  File Inclusion  Conditional Compilation  #if and #elif Directives |  |
| **Learning Resources:**  **Text Books/Reference Books::**   * Let Us C by Yashavant Kanetkar. ... * Programming in ANSI C, 8th Edition by E Balaguruswamy. * The C Programming Language" by Kernighan and Ritchie.   **Web Resources**  **Weblinks:**  <https://www.geeksforgeeks.org/c-programming-language/>  <https://www.w3schools.com/c/>  **MOOCs: Online courses for self-learning**  **Courses by NPTEL and MIT Open Courseware etc**  **Pedagogy:**   * Participative Learning, * Discussion * Demonstrations * Practical * Assignment |  |

**Internal Grading Policy** –

**CCA 60 marks**

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| Sr. No | Name of internal component | Planned date/week | % of weightage of internal marks |
| 1 | CCA-1 | First week of Sept | 25% |
| 2 | CCA-2(Mid term) | Oct | 25% |
| 3 | CCA-3 | Nov | 50% |
| 4 | LCA-1 | Second week of sept |  |
| 5 | LCA-2 | Nov |  |

**Prepared by** –

**Shruti Godbole**