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| **NAME OF DEPARTMENT:** | | | | | | | | | | | | | | | | | Computer Applications | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **Subject Name:** | | | | | | | Programming Concepts Using C Language | | | | | | | | | | | | | | | | | | | | | | | | | **Subject Code:** | | | | | | | | | TBI 102 | | |
|  | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | |  | | |
| **Course Name:** | | | | | | | BSc IT | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | |  | | |
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| **1** | **Contact Hours:** | | | | | | | | | 48 | | | |  | | | | | | | | | | | | | | | | | | | **L** | | 3 | | | **T** | | | 0 | **P** | 0 | |
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| **2** | **Examination Duration(Hrs):** | | | | | | | | | | | | | | | | | | |  | **Theory** | | | | | 0 | 3 |  | **Practical** | | | | | 0 | | 2 | |  | | | | | |
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| **3** | **Relative Weightage:** | | | | | | | | | | |  | | | | | **CWE:** | | | | | | | 25 | | **MTE:** | | | 25 | | **ETE:** | | | | 50 | | | | |  | | | |
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| **4** | **Credits:** | | | | 0 | | | 3 | |  | | | | | | | | | | | | |  | | |  | | |  | |  | | | |  | | | | |  | | | |
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| **5** | **Semester:** | | | | | **🗸** | | | |  | | |  | | |  | | |  | | |  | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | **Autumn** | | | | | | | **Spring** | | | | | | | **Both** | | | | | | |  | | | | | | | | | | | | | | | | | | |
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| **6** | **Pre-Requisite:** | | | | | | | | | **Knowledge of Algorithm and Flowchart** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **7** | **Subject Area:** | | | | | | | | | **Programming** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **8** | **Objective:** | | | | | | | | To familiarize students with the Methodology of Programming and C language | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **9** | **Course Outcome:**  CO1  CO2  CO3  CO4  CO5  CO6 | | | | | | | | | | | | A student who successfully fulfills the course requirements will be able to  Understand the basic terminology used in computer programming Write, compile and debug programs in C language.  Use different data types in a computer program.  Design programs involving decision structures, loops and functions.  Make use of pointers, string, arrays, structure and union.  Exercise files concept to show input and output of files in C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **10** | | **Details of the Course:** | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Unit No.** | | | **CONTENT** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **CONTACT HOURS** | | | | | | |
| **1** | | | **Problem Solving Tools**: Algorithms: Definition, Flowcharts: Symbols, A sequential flowchart, Conditional and iterative flow chart, Control Flow Statements: Sequential, Selection – If- else, Switch-Case; Iteration ,Program Design Methodologies: Top-down and bottom-up design approaches, Modular approach, History, Importance of C, Structure of C program, Data Types , primitive type and user defined type: typedef and enum, Variables and Constants, String Constant, Numeric Constant, Declaration of variables Modifiers, Identifiers and keywords, Symbolic constants; Statements & Expressions. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 10 | | | | | | |
| **2** | | | **Operators & Expression**: Unary operators, Arithmetic & logical operators, Bit wise operators, Assignment operators; Conditional operator, precedence and order of evaluation. Basic Input - Output Statements: formatted & unformatted input and output statements, Storage classes: automatic, external, register and static, **Decision Making, Branching and Looping** Decision making with if statement, The switch statement, the ?: operator, goto statement.  **Loops:** while*,* do while*,* for, Break and continue statements. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8 | | | | | | |
| **3** | | | **Arrays:** One-dimensional Arrays, Declaration of one-dimensional Arrays, Initialization of one-dimensional Arrays, Two-dimensional Arrays, Initializing two-dimensional Arrays. Character Arrays and Strings: Declaring, writing strings to screen and reading strings from Terminal, String handling functions.  **Functions:** Definition, User Defined function, Library function, Function calls: by reference and by value, Category of functions: Nesting of functions, Recursion, Passing arrays to functions, Passing strings to functions. Preprocessor directives, Macros, macro vs. function and conditional compilation, Variable number of arguments. Command line arguments. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 10 | | | | | | |
| **4** | | | **Pointers:** Declaring and Initialization of Pointer variables, accessing a variable through its pointer; Pointer arithmetic.  **Structure**: Structure and Union: Definition, declaration, accessing structure members, structure initialization, copying and comparing structure variables. Array’s of structures, Array’s within structures, nested structures, structures and functions.  **Union:** definition, comparing union with a structure, Bit-Fields | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 10 | | | | | | |
| **5** | | | **FILE HANDLING And System Calls** File Introduction, File types – Binary, Text files; Access mode, Opening and Closing files; Formatted –Unformatted input/output to files; Errors in opening files; File navigation operation- functions, System Calls Introduction: open(), close(), system(), System calls vs. library calls | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 10 | | | | | | |
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| **11** | | **Suggested Books:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | |
| **Sl. NO.** | | | **NAME OF AUTHERS/BOOKS/PUBLISHERS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **YEAR OF PUBLICATION** | | | | | |
| **1** | | | E.Balagurusamy, “Programming in ANSI C”, 8th Edition, Tata McGraw Hill. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2019 | | | | | |
| **2** | | | Yashwant Kanetkar ,“Let Us C”, 15th Edition, BPB Publication. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2018 | | | | | |
| **3** | | | S.K. Srivastava, “C in Depth”, 2nd Edition, BPB Publication. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2012 | | | | | |
| **4** | | | B. W. Kernighan and D. M. Ritchie, “ANSI C: The C Programming Language”, 2nd Edition, Pearson Publication. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2015 | | | | | |