

**Lok Jagruti Kendra University**

**Ahmedabad – 382210**

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| **Course Code** | **4110102** | | | |
| **Category** | **Core Subject** | | | |
| **Course Title** | **Programming in C Language ( C )** | | | |
| **Scheme and Credits** | **Theory** | **Tutorial** | **Lab** | **Credits** |
| **3** | **0** | **4** | **5** |
| **Pre-requisites (if any)** | **No.** | | | |

1.**Course Objectives:**

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| 1 | * To understand what is programming language |
| 2 | * To develop ability to solve the given problem using flow chart and algorithm |
| 3 | * To develop and enhance the problem solving skills using C Programming |
| 4 | * To understand functional hierarchical code organization |
| 5 | * To understand effective use of user define data types |
| 6 | * To be able to store & manage data in permanent storage media |

**2. Course Contents:**

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| **Unit** | **Course Content** | **Weightage** |
| **Unit**  **I** | **Introduction to programming in C:**  What is programming, Introduction to program and programming languages, Simple Program in C, compiler, interpreter, loader, linker, C program execution, Classification of Programming Languages, Flow Chart & Algorithm  **Good programming practices**: Comments, Meaningful identifiers name, Escape sequence, Structure of C Program, Tokens, Concept of Identifier, Variable, Constant and Keywords, Data types in C.  **Basics of C:**  Program statements, declarations, How the computer stores data in memory, Operators and Expressions, L-values and R-values. Type casting & type conversion.  **Input Output:** Basic Screen and Keyboard I/O in C, Unformatted Input and Output, Formatted Input, Output Functions and format specifier. | **20%** |
| **Unit**  **II** | **Control Statements, Arrays & Strings:**  **Control Statements:**  Specifying test condition for selection and iteration, writing test expression, Conditional execution and selection, Iteration and repetitive Execution: goto statement, for, while, do-while loops; variations of for loop, break, continue statement, nested loops.  **Arrays & strings:**  One-dimensional Array, Strings, String: One dimensional Array, Multi- dimensional array, Array of string. Writing first program with the help of flow chart and user define function. | **25%** |
| **Unit III** | **Functions and Pointers:**  **Function-**What is function, need of function, types of function, Passing array to Function, Scope and Extent, Storage class  **Recursion-**Concept of recursion, Types of recursion, comparison of iteration and recursion  **Pointer** - Concept of memory addresses, use of the (&) operator. **Pointer Execution** – Declaring and Initializing a pointer, Indirection Operator and dereferencing a pointer. **Pointer Arithmetic** – Assignment, Addition-subtraction with integers, pointer comparison. **Use of Pointers** – Returning more than one value from the function (Call by value and call by References concept).  **Pointers and Arrays** – One dimensional Arrays and pointers, Difference between array name and pointers, passing one dimensional and two dimensional array to functions, Pointers for character array(strings), Array of pointers 2-D Array and pointer, pointer to function.  **Dynamic memory allocation** – Array allocation, Memory freeing, Memory reallocation.  **Informative**- void Pointers, Null pointers, Pointers to pointers, Memory leak and Memory corruption, pointer to constant and constant pointer. | **25%** |
| **Unit IV** | **User Defined Data types and Files in C:**  **User Defined Data types – Basic structure operations**- Declaring structures and structure variables, Accessing the members of the structure, Initialization of structure, Structure comparisons and copying, typedef and its use. **Advanced** - Nested structures, Array within the structure and Array of structures, Structures with functions and structures with pointers.  Union and its operations Enumerated data type, bit field  **Files in C: Introduction – Streams in C, Types of Files. Files concept in C –** Declaration of File pointer, opening a file, closing a file various modes to open the file, Handling file functions for reading data from files **–** fscanf (), fgetw (), fgets (), fgetc (), fread(), Handling file functions for writing data into files- **f**printf, fputw, fputs(), fputc(), fwrite(),Detecting the end of the file **–** what is EOF and feof() function **Types of the files –** Binary and Text files. **Types of access to the file –** Sequential and Random access, Difference between both, how to read and write data in both the cases, for random access (fseek(),ftell(),rewind(),fgetpos(),fsetpos())  **Error handling during File operations**  **Files of records –** Working with files of records (fread() and fwrite()).  **Other functions –** Renaming a file, Removing a file, Command line Arguments | **20%** |
| **Unit**  **V** | **Pre-processor directives:**  **Pre-processor Directives**– Types of pre-processor directives, # define, #include, #undef, #line, pragma directives, Conditional directives, Predefined identifiers, Type Qualifiers, variable length arguments. recursion | **10%** |

**3. Text Books:**

1. Pradip Dey – Manas Ghosh, Programming in C Second Edition Oxford Publication).
2. Reema Thareja, "Programming in C',2nd Edition, Oxford University Press.
3. Balagurusamy, Programming in ANSI C , Tata McGrew Hill.
4. Ashok N Kamthane, Programming with ANSI and Turbo C, Pearson Education.
5. Brian W. Kernigham, Dennis Ritchie, “The C Programming Language”, Pearson
6. Yeshvant Kanetkar, “Let Us C”, BPB Publication

**4. Webilography:**

1. ‘C’ Programming Language: <http://www.w3schools.in/cprogramming-language/intro/>
2. Learn C Online: <http://www.learnconline.com/>
3. ‘C’ Frequently Asked Questions: http://www.c-faq.com
4. ‘C’ Programming: <http://www.cprogramming.com>
5. Sams Teach Yourself C in 24 Hours: http://aelinik.free.fr/c/

**5. Accomplishment of the student after completing the course**:

After completion of the course students should become capable of solving problems using computers through C programming language.