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| 13CS1001 | | | - | C PROGRAMMING AND DATA STRUCTURES | | | |
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| Hours / Week | : | 3 |  | | Sessional Marks | : | 40 |
| Credits | : | 6 |  | | End Examination Marks | : | 60 |

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| **UNIT – I** |
| Algorithms, flow charts, Program Development Steps, **Introduction To C Language**: Basic Structure of C Program, Identifiers, Basic data types, Variables, Operators. Operator Precedence and Associativity, Expression Evaluation, Type conversions.  **Selection Statements**: Various forms of if statements, switch statement, **Iteration**: while, do-while, for statements, other control altering statements– break, continue, goto and exit. |
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| **UNIT – II** |
| **Arrays**: Declaration, initialization, accessing elements, storing elements, two-dimensional and multi-dimensional arrays, applications of arrays.  **Strings** – Declaration, initialization, Built-in and user-defined String handling Functions  **Functions**: Basics, call by value and reference, recursive functions, Scope rules. |
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| **UNIT – III** |
| **Storage Classes**: auto, register, static, extern. Type qualifiers, Pre-processor Directives.  **Pointers**: Initialization of pointers, Address Arithmetic, Dynamic memory allocation functions, array of pointers, pointers to functions, command–line arguments.  **Structures**: Declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, pointers to structures, self-referential structures, unions, bitfields. |
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| **UNIT – IV** |
| **Data Structures**: Overview of Data Structures, Linked lists – implementation of Operations in singly linked list, **Stacks & Queues**: Basic Operations, representations of stacks and queues using arrays and linked lists, Applications. |
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| **UNIT – V** |
| **Graphs And Trees**: Representation and Traversals.  **Searching And Sorting**: Sorting - selection sort, bubble sort, insertion sort, quick sort, merge sort. Searching – linear and binary search methods. |
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| TEXT BOOKS |
| 1. C Programming & Data Structures, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning. 2. Problem Solving and Program Design in C, J.R. Hanly and E.B. Koffman, Fifth Edition, Pearson Ed. |
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| REFERENCE BOOKS |
| 1. The C programming language: Kernighan B W and Ritchie D M. 2. An Introduction to Data structures with applications: Tremblay J P and Sorenson P G. |