



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
ES14/ES24	Programming Methodology & Data Structures	3	--	--	3	--	--	3
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60% Weightage)		

Pre-requisite Course Codes		--
After successful completion of the course, student will be able to		
Course Outcomes	CO1	Provide solutions using structured and modular programming approach.
	CO2	Apply four primary constructs - sequential, iterative branching and recursive.
	CO3	Perform file handling and basic input output.
	CO4	Apply Stack, Queue and linked list operations for simple problem solving

Module No.	Unit No.	Topics	Ref.	Hrs.
1	1.1	Introduction to C-Programming: Algorithm, flowchart, Character set, standard Data types Operators: Arithmetic, Relational and logical, Assignment, Unary, Conditional, Bitwise, Comma, other operators. Expression, statements, Library Functions, Preprocessors	1,2,3	11
	1.2	Control structures: Branching Structures: If statement, If-else Statement, multi-way decision, Switch statement, Continue statement, Break statement Iterative Structures: while, do-while, for, Nested Control Structures	1,2,3	
	1.3	Structured Data types and pointers: Arrays: Declaration, Definition, Accessing array element, One-dimensional array, Two-Dimensional array Pointer: Introduction to pointers, Definition and uses of Pointers, Address operator, Dereferencing Pointer, Void Pointer	1,2,3	
2	2.1	Functions: Defining a Function, Accessing a Function, Function Prototype, Passing Arguments to a Function, Recursion	1,2,3	04
	2.2	Storage Classes: Auto, Extern, Static, Register	1,2,3	02
	2.3	Strings: Array of strings, String functions	1,2,3	02
	2.4	Structures & Union: Declaration, Initialization, structure within structure, Array of Structure, Operation on structures, Concept of Union, Difference between structure and union	1,2,3	02
3	3.1	Pointers revisited: Pointers to Pointers, Pointers and Array, Passing Arrays to Function, Pointers and Function, Pointers and two dimensional Array, Array of Pointers, Dynamic Memory	1,2,3	04



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		Allocation		
	3.2	File Handling: Types of File, File operation- Opening, Closing, Creating, Reading, Processing File	1,2,3	03
4	4.1	Introduction to Data Structure: Linear and Non-Linear Stack: Stack as ADT, operations on stack, applications of stack.	4,5	04
	4.2	Queue: Queue as ADT , Operation on Queue,Types of Queue- Circular and Priority Queue, Applications of Queue.	4,5	04
5	5.1	Linked List: Linked List as ADT, Operations on Singly Linked List.	4,5	03
			Total	39

References:

- [1] Kernighan , Ritchie, "The C programming Language", Prentice Hall of India.
- [2] Carlo Ghezzi, Mehdi Jazayeri, "Programing Language Concepts", John Wiley & Sons.
- [3] Byron Gottfried, "Programing with C", Mc Graw Hill (Schaum's outline series)
- [4] T.H.Coreman, C.E. Leiserson,R. L. Rivest, and C. Stein, "Introduction to algorithms", 2nd edition , PHI publications 2005.
- [5] Ellis Horowitz, SartajSahni,S.Rajsekar, "Fundamentals of Computer algorithms" , University press.