

Scheme of Programme-B.Sc Computer Science
(Scheme UG A1: Undergraduate Programmes(Multidisciplinary))

Semester 1

Course Code	Course Title	Course ID	L	T	P	L	T	P	Total Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
Core Course(s)														
CC-A1	Computer Fundamental and Architecture	240/CS/CC101	3	0	2	3	0	1	4	25	50	5	20	100

Semester 2

Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
Core Course(s)														
CC-A2	Programming In C	240/CS/CC201	3	0	2	3	0	1	4	25	50	5	20	100

Semester 3

Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
Core Course(s)														
CC-A3	Computer Networks	240/CS/CC301	3	0	2	3	0	1	4	25	50	5	20	100

Semester 4

Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
Core Course(s)														
CC-A4	Data Structure with C/C++	240/CS/CC401	3	0	2	3	0	1	4	25	50	5	20	100

Semester 5

Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
Core Course(s)														
CC-A5	Operating System	240/CS/CC501	3	0	2	3	0	1	4	25	50	5	20	100

Internship is to be done during summer break after 4th Semester, Marks will be added in 5th Semester.

Semester 6

Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
Core Course(s)														
CC-A6	Software Engineering	240/CS/CC601	3	0	2	3	0	1	4	25	50	5	20	100

DATA STRUCTURE WITH C/C++

Course code	CC-A4			
Category	Core Subject			
Course title	Data Structure with C/C++			
Scheme and Credits	L	T	P	Credits
	3	0	2	4
Theory Internal	25			
Theory External	50			
Practical Internal	05			
Practical External	20			
Total	100			
Duration of Exam	3Hrs			

Mishra
Note: The examiner will set nine questions in total. Question one will have seven parts from all units and the marks of first question will be of 20% of total marks of Question Paper and the remaining eight questions to be set by taking two questions from each unit and the marks of each question from Question no. 2 to 9 will be 20% of total marks of Question paper. The students have to attempt five questions in total, the first being compulsory and selecting one from each unit.

COURSE OBJECTIVES: Learning of data structure is like learning alphabets to learn any proper language. In this course student will be aware of memory management and use of data structure in computer programming.

UNIT – I

Data Structure Definition, Data Type vs. Data Structure, Categories of Data Structures, Data Structure Operations, Applications of Data Structures, Algorithms Complexity and Time-Space Trade-off, Big-O Notation. Strings: Introduction, Strings, String Operations, Pattern Matching Algorithms.

UNIT – II

Arrays: Introduction, Linear Arrays, Representation of Linear Array in Memory, Traversal, Insertions, Deletion in an Array, Multidimensional Arrays.

Sorting Techniques: Bubble Sort, Merge Sort, Selection Sort, Insertion Sort.

Searching Techniques: Sequential Searching, Binary Searching.

UNIT – III

Stacks: Representation of Stacks, Stack Operations, Applications

Queues: Operations on Queues, Circular Queues, Dequeue, Priority Queues, Applications.

Linked Lists: Introduction, Types, Operations (Insertion, Deletion, Traversal, Searching)

UNIT – IV

Trees: Basic Terminology, Representation, Binary Trees, Traversal of Binary Trees: In order, Pre-order & Post-order,

Graphs: Definitions and Basic Terminologies, Representation of Graphs, Graph Traversals, Applications.

Text Books:

1. Seymour Lipschutz, Data Structures, Tata McGraw-Hill Publishing Company Limited, Schaum's Outlines.
2. YedidyanLangsam, Moshe J. Augenstein, and Aaron M. Tenenbaum, Data Structures Using C, Pearson Education.

Reference Books:

1. Trembley, J.P. And Sorenson P.G., An Introduction to Data Structures With Applications, Mcgraw-Hill.
2. Mark Allen Weiss, Data Structures and Algorithm Analysis in C, Addison-Wesley.

List of Experiments

1. Write a program to search an element in an array using linear search.
2. Write a program to search an element in an array using Binary Search Method.
3. Write a program to perform following operations on matrix
(a) Addition (b) Subtraction (c) Multiplication (d) Transpose
4. Write a program to implement selection sort
5. Write a program to implement insertion sort
6. Write a program to implement bubble sort
7. Write a program to implement stack operations.
8. Write a program to implement queue operations.
9. Write a program to create a linked list & perform operations such as insert & delete in the linked list.

Kishu