

Syllabus

Class- B.Sc-II, Sem-III

Subject- Computer Science.

Unit I : Data structure: Introduction to data structure, types of data structure: primitive and non primitive, linear and non linear data structure, data structure operations. Linear arrays: Definition and concepts, representations, operations on arrays: traversing, inserting, deleting. Stacks: Definition and concepts, representations, operations on stacks: Push , Pop.

Unit II: Queues: Definition and concepts, representations, operations: Insert and delete; concept of circular queue, dequeue, priority queue. Linked List: Introduction, implementation of linked list, types of linked list: single, circular and doubly linked list. Operations on linked list: Insert, Delete, Search.

Unit III: Trees: Definition and concept, binary tree, traversing operations: in order, pre-order, post-order Sorting and Searching: Definition and concept, sorting techniques: bubble, selection, insertion, merge and quick sort. Searching techniques: Sequential and binary searching.

Unit IV : Object Oriented Programming: features, advantages and applications of oops. Introduction to C++, Program structure in C++. Classes and Objects: classes and objects specifiers, defining data member and member functions; accessing members. Managing console I/O : Formatted and Unformatted, Usage of manipulators, memory allocation operators: new and delete, scope resolution operator.

Unit V: Functions in C++: Passing objects to and returning objects from functions. Function overloading and default argument, Inline function, Friend function. Array of Objects, Pointer to objects, 'this' pointer. Constructor and Destructor: Types of constructor, Usage of Constructor.

Unit VI : Operator Overloading : Definition, Overloading unary and binary operators. Inheritance: Definition, Visibility mode; Types of inheritance with example, virtual base classes and abstract base classes.

Department of Computer Science, Shri Pundlik Maharaj Mahavidyalaya Nandura (Rly)
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Books Recommended:

1. An introduction to data structure with application: Jean-paul Trembley, Paul G Soresan Mc Graw Hill Publication.
2. Data structures : Horowitz, Sahani, Galgotia Publication
3. Data structure and algorithms : Aho, Hopcroft, Ulman
4. Introduction to Data structure : Bhagat Singh, Mops
5. Object Oriented Programming with C++ : E Balagurusamy TMH 6. Mastering in C++ by K. R. Venugopalan 7. Programming with C++ by R. S. Nisar Ali.

Practical :

Minimum 16 Practical base on

A: Unit I , Unit II and Unit III (Minimum 8 practical using C Programming Language)

B: Unit IV, Unit V and Unit VI (Minimum 8 practical)

The Examination in Computer Science of Fourth Semester shall comprise of one theory paper of 80 Marks of three hours duration and internal assessment of 20 Marks. The practical examination will be of 4 Hrs. duration and carry 50 Marks.

The distribution of marks for practical examination is as under:

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|--------------------------------------------------|-----------------|
| 1. Program writing / execution (on group A & B): | 30 Marks |
| 2. Practical record: | 10 Marks |
| 3. <u>Viva Voce :</u> | <u>10 Marks</u> |

Total 50 Marks