

B.Sc. II YEAR Computer Science (For Regular Students)

Paper	Subjects	Internals			Theory	Total (B)	Total A+B	Practical	Grand Total
		3 Months	6 Months	Total (A)					
I	Object Oriented Programming using C++ and Java	10	10	20	40	80	100	50	150
II	Data Structures and Software Engineering				40				

MdOshulain

Asmita Sanyal

Chand

MD

Learning outcomes of BSc Computer Science

PLO-1. Demonstrate the aptitude of Computer Programming and Computer based problem solving skills.

PLO-2. Display the knowledge of appropriate theory, practices and tools for the specification, design, and implementation

PLO-3. Ability to link knowledge of Computer Science with other two chosen auxiliary disciplines of study.

PLO-4. Ability to understand, design, and analyses precise specifications of algorithms, procedures, and interaction behaviour.

PLO-5. Ability to apply mathematics, logic, and statistics to the design, development, and analysis of software systems

PLO-6. Ability to be equipped with a range of fundamental principles of Computer Science that will provide the basis for future learning and enable them to adapt to the constant rapid development of the field.

PLO-7. Ability of working in teams to build software systems.

PLO-8. Ability to identify and to apply relevant problem-solving methodologies

MdOshulain

Asmita Sanyal

Chand

MD

UNIT-V

Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Classes, Visibility Control. Multithreading: Thread class, Life cycle of a thread. Writing Applets, Applets Life Cycle, Creating an Executable Applet, Applet Tag, Adding Applet to HTML File, Running the Applet.

Text Books:

Object-Oriented programming with ANSI & turbo C++ by Ashok N. Kamthane.

Object-Oriented programming in C++ by E.Balagurusamy

E. Balaguruswamy, "Programming In Java", 2nd Edition, TMH Publications ISBN 0-07- 463542-5

Reference Books:

C+ Object-Oriented programming in C++ by Robert Lafore.

The complete reference by Herbert Schildt, TMH publication.

Suggested Practical List:

C++

1. Write a program to show the implementation of Call by reference, call by value, call by address.
2. Write program to implement inline function for calculating square and cube of given number.
3. Write program in C++ to show the working of access specifier public, private, protected.
4. Write program in c++ to show the working friend function.
5. Write program in c++ to show the working static function.
6. Write program in c++ to initialized class member variables using constructor and destroy the created space using destructor.
7. Write a program to implement function overloading using class.
8. Write a program in C++ to implement unary operator overloading and binary operator overloading.
9. Write a program to show the implementation of Single, Multi level, multiple and hieratical inheritance.
10. Write a program to implement virtual function and pure virtual function.

Java

1. Write a program in java to find the average and sum of the N number using command line argument.
2. Write a program in java to create class Interest, initialized class using constructor, create methods like simple_interest, compound_interest.
3. Write a program in java, create a class named area and calculate area of rectangle, square, circle, triangle.

A collection of approximately 15 handwritten signatures in blue ink, arranged in three rows. The signatures are of various styles, some legible and some more stylized. Notable ones include 'Md Abdulain', 'Ashish Sankar', 'MD', and 'Ravi'.

4. Write a program in java, create class product as abstract class. Create another class fan which must inherits product class.
5. Write java program, create a class string_calculate and implement following methods: toLowerCase, toUpperCase, toString, substr, equals, equalsIgnoreCase, toCompare, chatAt, trim, indexOf.
6. Write a program in java to that show implementation of Interface.
7. Write a program in Java to show implementation of Applet.
8. Write a program in Java to show implementation of Thread.
9. Write a program in java to that show implementation type casting.
10. Write a program in java to that show implementation final class.

MdOblulain

Ashish Sankar

Chand

Abhi

ant

DK

kg

Ferd

S. Deep

Kushal

MD

Ram

Arav

SK

Rave

Shi

Shi

Shi

different life-cycle models. Requirement Analysis and Specification: Properties of a good SRS document. DESIGN CONCEPTS AND PRINCIPLES: Cohesion, Coupling and Functional Dependence, need of function independence, function-oriented design and object-oriented design, DFD model of a system.

UNIT-V

PROJECT ESTIMATION: Project planning, Metrics for software project size estimation: Lines of Code (LOC), Function point (FP), Limitations of function point (FP) metric. PROJECT ESTIMATION TECHNIQUES: Empirical estimation techniques - COCOMO Model SOFTWARE TESTING FUNDAMENTALS: Black Box Testing - equivalence class partitioning, Boundary Value Analysis. White Box Testing, Control flow graph, Cyclomatic complexity. SOFTWARE TESTING STRATEGIES: Unit Testing, Regression Testing, System Testing: Alpha and Beta Testing, Integration testing, Recovery Testing, Stress Testing, Performance Testing.

Text Books:

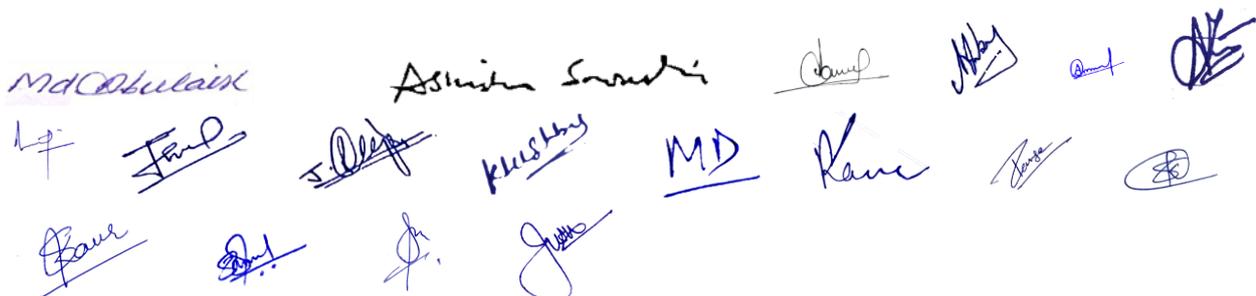
1. Software Engineering: A Practitioner's Approach, Author: Roger S. Pressman
2. Data Structures Through C (A practical Approach), Author: G.S. Baluja
3. An Integrated Approach to Software Engineering Author: Pankaj Jalote

Reference Books:

1. Data Structures using C++ Author: D.S. Malik Second Edition
2. Principles of Data Structures using C and C++ Author: Vinu V Das New Age International Publishers
3. A Practical Introduction to Data Structures and Algorithm Analysis Author: Clifford A. Snaffer Third Edition (Java)
4. Data Structures and Algorithms Made Easy Narasimha Karumanchi

Practical List

1. Write a program to find the factorial of a given number using recursion
2. Write a program to find GCD using recursion
3. Write a program for bubble sorting
4. Write a program for linear search
5. Write a program for binary search
6. Write a program for selection sorting
7. Write a program for quick sorting
8. Write a program for insertion sorting
9. Write a program to print Fibonacci series using recursion
10. Write a program to perform insertion and deletion operation on stack
11. Write a program to perform insertion and deletion operation on queue using static implementation



A collection of approximately 15 handwritten signatures in blue ink, arranged in three rows. The signatures are stylized and vary in length and complexity. Some are clearly legible, such as 'Md Abdulain', 'Ashish Sankar', 'MD', and 'Ravi'. Others are more abstract and difficult to decipher.

12. Write a program to perform insertion and deletion operation on queue using dynamic implementation
13. Write a program to insert a node at the beginning in singly linked list.
14. Write a program to insert a node at the middle of singly linked list
15. Write a program to insert a node at the last of singly linked list
16. Write a program to delete a node from the beginning of singly linked list
17. Write a program to delete a node from the middle of singly linked list
18. Write a program to delete a node from last in the singly linked list.
19. Write a program to traverse all the nodes in singly linked list.
20. Write a program to insert a node in the beginning of circular linked list.
21. Write a program to insert a node in the last of circular linked list.
22. Write a program to evaluate postfix operation.

MdOobulaink

kg

Ferd

S. Deep

Krishna

MD

Ram

Ram

Ram

Ram

Ram

Ram

Ram

Ashish Sankar

Ram

Ram

Ram

Ram