Scheme & Syllabus

of

B.Sc.(Computer Science)
Ist to VIth Semester

w.e.f. July 2011
(2011-2014 Batch onwards)

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Proposed Syllabus & Scheme for B. Sc. (CS) SEMESTER SYSTEM

(Effective from July 2011 session for 2011-14 batch onwards)

CLASS /SEMESTER	B. Sc.(CS)	CCE	MIN. MARKS	TERM END EXAM	MIN. MARKS	TOTAL 100%	MIN. MARKS
FIRST SEM.	**CS-1101**--Computer Organization	15	5	85	28	100	33
	CS-1101P- Practical on Computer Org. & MS Office	---	---	---	---	50	17
SECOND SEM.	**CS-1201**- Programming & Problem Solving through C.	15	5	85	28	100	33
	CS-1201P- Practical on C Language	---	---	---	---	50	17
THIRD SEM.	**CS-2301**-Data Structure using C Lang.	15	5	85	28	100	33
	CS-2301P-Practical on Data Structure	---	---	---	---	50	17
FOURTH SEM.	**CS-2401**- Data Base Management System	15	5	85	28	100	33
	CS-2401P-Practical on Data Base Management System	---	---	---	---	50	17
FIFTH SEM	**CS-3501**Object Oriented Programming using C++	15	5	85	28	100	33
	CS-3501P-Practical on C++	---	---	---	---	50	17
SIXTH SEM	**CS-3601 Computer Networks**	15	5	85	28	100	33
	CS-3601P-Practical on Web Technology	---	---	---	---	50	17

PS :- CCE ----- CONTINUOUS COMPREHENSIVE EVALUATION, **INDIVIDUAL PASSING REQUIRED FOR THEORY**

CS-2301 DATA STRUCTURE USING C
Commencing from 2012-13 onwards

Unit- I

Introduction to Data Structures: Definition of Data structure and Abstract data type
Classification of Data structures: Linear,Non-linear,homogeneous,non-homogeneous,static & dynamic.
Arrays: Definition & types of array,Memory representation of one & two dimensional array,Operations: Insertion ,Deletion,Traversal
Sparse Matrix: Definition & memory representation.

Unit- II

Stack : Definition, Array implementation of stack (static stack) : Operations PUSH, POP, TRAVERSE .
Applications of stack : Infix, Prefix , Postfix representation and evaluation using stack, Use of stack in recursive implementation.
Queue : Definition, Array implementation of queue (static queue) : Operations INSERT, DELETE, TRAVERSE.
Introduction to Circular queue: Definition & implementation, Priority queue, Double ended queue
Applications of queue

Unit- III

Introduction to Linked List: Definition, advantages, Types of linked list: single, doubly, circular linked list
Operations: Creation, insertion, deletion & traversal of linked list

Unit- IV

Complexity of Algorithms: Time & space complexity, Best-case, worst-case, average-case, Big –oh notation.
Searching Algorithm: Linear or sequential search, Binary search, Interpolation search using array.
Complexity of Linear search, Binary search, Interpolation Search
Sorting Algorithm: Bubble sort, Selection sort, Insertion sort, Merge sort
Complexity of sorting algorithm.

Unit- V

Introduction to Tree: Definition, Binary tree: Definition, representation,
Operations: Traversal, insertion, deletion
Binary search Tree(BST): Definition and creation, Search using BST
Introduction to B-Tree & B+ tree.
Introduction to graph: Definition & representation, Graph Traversal: Depth First Search(DFS),Breadth First Search(BFS) algorithm.

Text Books:

1. Yedidyah Langsam Moshe J. Augenstein, Aaron M. Tenenbaum,"**Data Structures using C & C++",** PHI New Delhi, 2nd Edition

Reference Books:

1. G.S.Baluja, "**Data Structures Through C**", Dhanpat Rai & Co., 4th Edition
2. Seymour Lipschutz, "**Data Structures**",Schaum's Outline Series,Tata Mc Graw Hill Publishing Company Ltd.

3. Adam Drodzek,"**Data Structures & Algorithm in C++**", 2nd Edition

CS-2301P Practical exercise on Data Structure using C

1. Write a program for address calculation of an element in one and two dimensional array (row major order and column major order).
2. Write a program for insertion, deletion and traversal of elements of an array.
3. Write a program for sparse matrix implementation.
4. Write a program for complete implementation of stack using array with push, pop and traversal operations.
5. Write a program for conversion of an infix expression into postfix representation and evaluation of that postfix form.
6. Write a program for complete implementation of queue using array with insertion, deletion and traversal operations.
7. Write a program for complete implementation of circular queue using array with insertion, deletion and traversal operations.
8. Write a program for complete implementation of double ended queue using array with insertion, deletion and traversal operations.
9. Write a program to create singly linked list (creation, insertion, deletion and traversal).
10. Write a program to create doubly linked list (creation, insertion, deletion and traversal).
11. Write a program to create circular singly linked list (creation, insertion, deletion and traversal).
12. Write a program to create circular doubly linked list (creation, insertion, deletion and traversal).
13. Write a program for complete implementation of stack using linked list with push, pop and traversal operations.
14. Write a program for complete implementation of queue using linked list with insertion, deletion and traversal operations.
15. Write a program for implementation of binary tree (creation, insertion, deletion), with preorder, inorder and postorder traversal.
16. Write a program for implementation of binary search tree (creation, insertion, deletion), with preorder, inorder and postorder traversal.
17. Write a program for implementing graphs and showing depth first search and breadth first search traversals.
18. Write a program for linear search.
19. Write a program for Binary search.
20. Write a program for interpolation search.
21. Write a program for bubble sort.
22. Write a program for selection sort.
23. Write a program for insertion sort.
24. Write a program for merge sort.
25. Write a program for quick sort.

CS-2401 DATA BASE MANAGEMENT SYSTEM
Commencing from 2012-13 onwards

Unit – 1
Fundamentals of DBMS: Data, Information, Database & Computers, DBMS Definition, DBMS versus file processing system, Components of DBMS Environment, Instances & Schemas, Three Levels Architecture, Data Independence, Data Dictionary, Database Users, Data Administrators.

Unit – 2
Modeling the Real World, Various Data Models & their Comparison, Entity-Relationship Model. RDBMS –Concept, Components, Data Integrity, Keys, Relational data Manipulations and Relational Algebra, Tuple Calculus.

Unit – 3
Normalization: Definition, Decomposition, Basic Concepts like FD, Objectives of Normalization. Normal Forms- First, Second, Third Normal Form, BCNF, Concept of Multi Valued Dependencies & Higher Normal Forms.

Unit – 4
Introduction to SQL, DDL, DML, and DCL statements, Creating Tables, Adding Constraints, Altering Tables, Update, Insert, Delete & various Form of SELECT- Simple, Using Special Operators for Data Access. Nested Queries & Exposure to Joins, Aggregate Functions.

Unit – 5
Transaction: Concept of Transaction, Concurrency Control-Problem & its Basis, Concurrency Control - Locks & Deadlocks. Recovery-Kind of Failures, Recovery Techniques, Security-Authentication, Authorization, Access Control

Text Book:
1. H. F. Korth & A. Silverschatz, Database Concepts, Tata McGraw Hill, New Delhi
Reference Book:

1. Elmasri & Navathe, Fundamentals of Database systems, Addison & Weisely, New Delhi.
2. C. J. Date, Database Systems, Prentice Hall of India, New Delhi.
3. Hoffer , Prescott, & McFadden, Modern Database Management, 8/e.
4. Ivan Bayross, SQL, PL/SQL, BPB Publications, New Delhi.

CS-3501 Object Oriented Programming using C++
Commencing from 2013-14 onwards

To introduce the concept of object oriented programming through C++.

UNIT I

Introduction, OOPS languages, characteristics of OOP's languages, application of OOP's, OOP's paradigm, concepts: object, class, data abstraction, data encapsulation, inheritance, and polymorphism.Static and dynamic binding, message passing, benefits of OOP's, disadvantage of OOP's.Application of OOP's.

UNIT II

C++ programming basics, basic program structure ,preprocessor directive, data types, operators, manipulator, type conversions, C++ stream class. Control statement: for, do, while, do-while Decision statement if, if-else, switch-Case. Jump statement: break, continue, go to, exit.

UNIT III

Function and arrays. Classes and instances, defining classes in object oriented language, building and destroying instances (constructors and destructors), modifiers, friend and inline functions, string handling function.

UNIT IV

Data encapsulation,polymorphism, operator overloading, function overloading, virtual functions.

UNIT V

Inheritance, reusability of code through inheritance, type of inheritance, data abstraction, abstract classes.Templates and exception handling.

TEXT BOOK: Object oriented programming with c++ by Balaguruswamy.TMH Publishing

REFERENCE BOOKS:

1. C++, The Complete Reference, 4th Edition, Herbert Schildt, TMH.
2. C++ Primer, 3rd Edition, S.B.Lippman and J.Lajoie, Pearson Education.
3. The C++ Programming Language, 3rd Edition, B.Stroutstrup, Pearson Education.
4. OOP in C++, 3rd Edition, T.Gaddis, J.Walters and G.Muganda, Wiley DreamTech Press.
5. Object Oriented Programming in C++, 3rd Edition, R.Lafore, Galigotia Publications pvt ltd.
6. Computer Science, A Structured Programming Approach Using C++, B.A.Forouzan and R.F.Gilberg, Thomson

PRACTICAL (OBJECT ORIENTED PROGRAMMING THROUGH C++)

1. Write a program to find the maximum of three using conditional operator.
2. Write a program to find the largest, second largest and third largest in a givenarray.
3. Write a program to generate Armstrong series.
4. Write a program to find the factorial of a given number.
5. Write a program to generate the Fibonacci series.
6. Write a program to check whether the given number is palindrome or not.
7. Write a program to find the GCD and LCM of two no's.
8. Write a program to print the diagonal elements of matrix.
9. Write a Program to demonstrate use of array of objects.
10. Program to demonstrate use of function overloading.
11. Write a function which accept object as a parameter and returns object.
12. Write a Program to demonstrate the virtual base class.
13. Write a Program to demonstrate use of polymorphism (virtual function).
14. Write a program to overload ++ operator to increment age of person by one month.
15. Write a program to illustrate the use of scope resolution operator.
16. Write a program to find the square root using inline function.
17. Write a program to illustrate the use of friend function.
18. Create two employee objects and display each object's yearly salary.
19. Give each employee a 10% raise and display each Employee's yearly salary again..
20. Write C++ program to create five object of book, get information of book using getdata() function including name, price, publication and author.

CS-3601 Computer Network
Commencing from 2013-14 onwards

UNIT-I

Computer Network, Goals and Applications, Reference models – OSI and TCP/IP. A Comparative study. Network hardware – LAN, MAN and WAN and topologies, LAN components – File server, Workstations, Network Adapter Cards. Connection Oriented and Connection less services.

UNIT-II

Data communication system, data communication links, character codes, digital data rates, serial data formats, encoded data formats, error detection & correction. Transmission media- guided and unguided media, Switching Techniques – Circuit Switching, Packet Switching, Message Switching.

UNIT-III

Data link protocol, character oriented protocol & bit oriented protocol, network architecture protocols, Ethernet, token bus & token ring.

UNIT-IV

Internet basics: - Elements of the web, viewing web pages with a browser, using a browser for a mail, News and chat, security and privacy issues. Internet: advantage and disadvantage. Internet Services

Web server and proxy server, Web caches, Web browser like Internet Explorer, Netscape Navigator, and Communication Suit, Internet Security issues, Embedded and Software based firewall, Data encryption and Digital Signature and Certificates

UNIT-V

The art of creating the website and home page, The HTML programming basics, Syntax and rules, Tables, Frames, Forms, Example of HTML page, Choice of colour, banners, Linking with HTML page, Div, Span, met tags, span, Introduction to DHTML, JavaScript, Use of JavaScript, JavaScript Syntax, Data type, Variable , Array , Operator and Expressions.

Text Books:

1. Data & Network Communication by Michael A. Miller

Reference Books:

1. Deitel & Deitel,Goldberg,"Internet and World Wide Web-How to Program",Pearson Education Asia,2001.
2. Computer Networks-A.S.Tanenbaum.

CS-3601P (Practical Exercise on Computer Networking)
Commencing from 2013-14 onwards

1. Create a webpage that prints your name to the screen.
2. Create a webpage that print the numbers 1 - 10, each number being a different colour.
3. Print a paragraph with 4 - 5 sentences. Each sentence should be a different font.
4. Print two lists with any information you want. One list should be an ordered list, the other list should be an unordered list.
5. Print a paragraph that is a description of a book, include the title of the book as well as its Author. Names and titles should be underlined, adjectives should be italicized and bolded
6. Print some preformatted text of your choosing
7. Create a page with a link at the top of it that when clicked will jump all the way to the bottom of the page. At the bottom of the page there should be a link to jump back to the top of the page
8. Display an image that has a border of size 2, a width of 200, and a height of 200.
9. Display five different images. Skip two lines between each image. Each image should have a title
10. Display an image that when clicked will link to a search engine of your choice
11. Add a simple table to for storing Train information (Train No, Name, Source, Destination, Time) without borders. Do the following
    1. Add border value of 1, save and view.
    2. Add a border value of 5, save and view.
    3. Make the top row a table header, save and view.
    4. Align all data elements to the middle of their cells, save and view.
    5. Divide Time into Departure Time, Arrival Time.
12. Write a JavaScript, which calculate sum or product depending on the drop down menu selection of two numbers, accepted using textbox and display the result in the third textbox. The action performs on click event on button.
13. Write a JavaScript which displays current date and time when page loads.
14. Write a JavaScript that prompts the user for his or her name as the page load (via dialog box) and then welcome the user by name in the body of the page.
15. Create a Webpage using two image files, which switch between one another as mouse pointer mover over the images.
16. Write a JavaScript,which calculates factorial of a number,accepted using textbox and displays the result in second textbox.The action performs on click event on button.
17. Wirte a JavaScript which revereses the number accepted in textbox.
18. Create an HTML form which has number of textboxes like First Name,Last Name,Address and PinCode.Write a JavaScript code to verify following on click event of a button:
    1. Pop up an alert indicating which textbox has left empty and setfous on that specific textbox.
    2. Give message “Thank You” if all text boxes are filled.
    3. Pop Up an alert message if text within Pin code in not numeric value and greater than 6 digits and setfocus on it till it is given proper value.
