Scheme & Syllabus

of

B.Sc. (IT)
Ist to VIth Semester

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

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

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

CLASS /SEMESTER	B. Sc.(IT)	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**- Prog. 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	15	5	85	28	100	33
	CS-2301P- Practical on Data Structure using C	---	---	---	---	50	17
	IT- 2302 Internet & Web Technology	8	3	42	14	50	17
FOURTH SEM.	**CS-2401** – Database Management System	15	5	85	28	100	33
	CS-2401P- Practical on Database Management System	---	---	---	---	50	17
FIFTH SEM	**IT-3501**-Object oriented Programming using C++	15	5	85	28	100	33
	IT-3501P- Practical on Object oriented Programming using C++	---	---	---	---	50	17
	IT-3502-S/w Engineering	08	3	42	14	50	17
SIXTH SEM	**IT-3601**-Java Programming	15	5	85	28	100	33
	IT-3601P-Minor Project Using Java/Web Tech	---	---	---	---	50	17

PS :- CCE ----- CONTINUOUS COMPREHENSIVE EVALUATION, **INDIVIDUAL PASSING REQUIRED FOR THEORY AND PRACTICAL SUBJECT.**

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

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,GraphTraversal : 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. Seymour Lipschutz,"**Data Structures**",Schaum's Outline Series,Tata Mc Graw Hill Publishing Company Ltd.
2. 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.

IT 2302 INTERNET & WEB TECHNOLOGY
Commencing from 2012-13 onwards

Objective: To introduce the concept of Web Technology and internet.

Unit-I
Concept of the point to point and Broadcast Network, Bus, Ethernet LAN, FDDI LAN, Token Ring, Star, Hub, MAN, WAN, Routers, Gateways, Bridge, Switches, Subnet, Internet and Intranet.

Unit-II
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.
Concept of ISP (Internet Service Provider), Internet Backbones, NAPs, Concepts of URL Address, Domain Names,

Unit-III
Web server and proxy server, Web caches, FAQS, 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-IV
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 color, banners, Linking with HTML page, Div, Span, meta tags.

Unit-V
WORLD WIDE WEB (WWW) - History, Working, Web Browsers and their versions, Its functions, URLs, web sites, Portals. FTP, NNTP. SMTP, Configuring a Computer for an email
Concept of Search Engines, Search engines types, searching the Web and Web Servers, client and server techniques.

Text Book:
1. Deitel & Deitel, Goldberg, “Internet and World Wide Web – How to Program”, Pearson Education Asia, 2001.

Reference Books:
1. Computer Networks – A.S. Tanenbaum

IT-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 Models. 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 Books:

1. Jeffrey,Hoffer , Prescott, Heikki Topi, Modern Database Management, 9/e.
2. Elmasri & Navathe, Fundamentals of Database systems, Addison & Weisely, New Delhi.
3. C. J. Date, Database Systems, Prentice Hall of India, New Delhi.
4. Ivan Bayross, SQL, PL/SQL, BPB Publications, New Delhi.

IT-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

IT-3501P PRACTICAL (OBJECT ORIENTED PROGRAMMING USING 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.

IT-3502 SOFTWARE ENGINEERING
Commencing from 2013-14 onwards

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UNIT – I

General business environment, Business system concept, system development life cycle, A generic view of Software Engineering,, Software Characteristics, Application, Linear Sequential model,the prototyping model, RAD Model, Spiral & evolutionary model.

UNIT – II

Project selection: Source of project request, managing project review & selection, preliminary investigation, system requirement specification & analysis: fact finding technique, Feasibility study, Cost & Benefit analysis & estimation.

UNIT – III

Structured system analysis, Tools of Structured analysis, Software Design Fundamental, Data Flow Diagram, Object Oriented Design & Data Oriented design
method.

UNIT – IV

Software Quality Assurance, Software testing techniques, software testing fundamentals, White Box Testing (Basis path Testing, Control Structured testing), Black Box Testing, Software Testing Strategies : A Strategic approach to software testing, Strategic issue unit testing, integration testing, Validation testing, System Testing, The art of Debugging.

UNIT – V

System Implementation & software Maintenance, Hardware & Software Selection.

TEXT BOOK

1. Software engineering: Ian Somerville,9 th edition, Pearson.

REFERENCE BOOKS:

1. Software Engineering by Roger S. Pressman, Mc- Graw Hill.
2. An Integrated Approach to software engineering Pankaj Jalote, 3rd Edition, Springer.
3. System Analysis & design by Elias M. Awad, Galgotia Pub.

IT-3601 JAVA PROGRAMMING
Commencing from 2013-14 onwards

UNIT–I

C++ Vs JAVA, JAVA and Internet and WWW, JAVA support systems, JAVA environment
JAVA program structure, Tokens, Statements, JAVA virtual machine, Constant & Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting.
Operators: Arithmetic, Relational, Logical Assignments, Increment and Decrement, Conditional, Bitwise, Special, Expressions & its evaluation
If statement, if…else… statement, Nesting of if…else… statements, else…if Ladder, Switch? Operators, Loops – While, Do, For, Jumps in Loops, Labeled Loops.

UNIT–II

Defining a Class, Adding Variables and Methods, Creating Objects, Accessing Class Members
Constructors, Methods Overloading, Static Members, Nesting of Methods
Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Classes, Visibility Control

UNIT–III

Arrays: One Dimensional & two Dimensional, strings, Vectors, wrapper Classes, Defining Interface Extending Interface, Implementing Interface, Accessing Interface Variable,
System Packages, Using System Package, Adding a Class to a Package, Hiding Classes

UNIT–IV

Creating Threads, Extending the Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface

UNIT–V

Local and Remote Applets Vs Applications, Writing Applets, Applets Life Cycle, Creating an Executable Applet
Designing a Web Page, Applet Tag, Adding Applet to HTML File,
Running the Applet, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User

TEXT BOOKS:

1. *E. Balaguruswamy,* **"Programming In Java",** *2nd Edition, TMH Publications* ISBN

REFERENCE BOOKS:

1. *Peter Norton,* **"Peter Norton Guide To Java Programming",** *Techmedia Publications*