DEVI AHILYA VISHWAVIDYALAYA, INDORE

Detailed Syllabus of

B.Sc.(IT)

Effective From July – 2010

TOTAL PAGES = 25

SEMESTER SYSTEM
SYLLABUS FOR B Sc(IT)

Effective from July 2010

CLASS --------→ / SEMESTER	B.Sc.(IT)	CCE 30 %	MIN. MARKS	TERM END EXAM 70%	MIN. MARKS	TOTAL 100%	MIN. MARKS
				Effective From Session July 2010			
FIRST SEM.	CS-101 PC SOFTWARE	15	5	35	12	50	**17**
	CS-102 COMPUTER FUNDAMENTALS	15	5	35	12	50	**17**
	CS-101P - PRACTICAL ON WINDOWS, MS-OFFICE, AND INTERNET	----	----	----	----	50	**17**
SECOND SEM.	CS-201 PROGRAMMING AND PROBLEM SOLVING THROUGH C LANGUAGE	15	5	35	12	50	**17**
	CS-202 COMPUTER ORGANISATION	15	5	35	12	50	**17**
	CS-203 INTRODUCTION TO INFORMATION SYSTEM	15	5	35	12	50	**17**
	CS-201P - PRACTICAL ON C PROGRAMMING	----	----	----	----	50	**17**
THIRD SEM.	CS-301 DATA STRUCTURE USING C++	15	5	35	12	50	**17**
	CS-302 DBMS FUNDAMENTALS	15	5	35	12	50	**17**
	CS-301P PRACTICAL ON DATA STRUCTURE AND DBMS	----	----	----	----	50	**17**
FOURTH SEM.	CS-401 OPERATING SYSTEM USING LINUX	15	5	35	12	50	**17**
	CS-402 SYSTEM ANALYSIS & DESIGN	15	5	35	12	50	**17**
	CS-403 INFORMATION TECHNOLOGY AND ITS APPLICATION	15	5	35	12	50	**17**
	CS-401P PRACTICAL ON LINUX	----	----	----	----	50	**17**

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

CLASS/SEM	B.SC. IT	CCE 30%	MIN MARKS.	TERM END EXAM 70%	MIN MARKS.	TOTAL 100%	MIN MARKS
FIFTH SEM	CS-501 JAVA PROGRAMMING –I	15	5	35	12	50	17
	CS-502 WEB TECHNOLOGY & PROGRAMMING	15	5	35	12	50	17
	CS-503– PRACTICAL ON JAVA & WEB PROGRAMMING					50	17
SIXTH SEM	CS-601 JAVA PROGRAMMING –II	15	5	35	12	50	17
	CS-602 DATA & NETWORK COMMUNICATION	15	5	35	12	50	17
	CS-604 INFORMATION SECURITY	15	5	35	12	50	17
	CS-603 - PRACTICAL ON JAVA PROGRAMMING –II					50	17

CS 101 - PC SOFTWARE

Effective From Session July 2010

Maximum Marks: 35   **Minimum Pass Marks: 12**

UNIT I
MS-Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel – display properties, adding and removing software and hardware, setting date and time, screen saver and appearance. Using windows accessories.

UNIT-II
Documentation Using MS-Word - Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Advance Features of MS-Word-Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object, Template.

UNIT III
Electronic Spread Sheet using MS-Excel - Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Advance features of MS-Excel-Pivot table & Pivot Chart, Linking and Consolidation.

UNIT IV
Database Management using Excel-Sorting, Filtering, Table, Validation, Goal Seek, Scenario.

UNIT V
Presentation using MS-PowerPoint: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.

TEXT BOOK
Learn Microsoft Office – Russell A. Stultz – BPB Publication

REFERENCES BOOKS
1. Microsoft Office – Complete Reference – BPB Publication
2. Courter, G Marquis (1999). Microsoft Office 2000: Professional Edition. BPB.
3. PC Software – Shree Sai Prakashan, Meerut

CS-101P - PRACTICAL ON WINDOWS, MS-OFFICE, AND INTERNET

Maximum Marks: 50   **Minimum Pass Marks:17**

WINDOWS
1. Creating folder, cut, copy, paste, managing file and folder in windows.
2. Arrange icons, set display properties
3. Adding and removing software and hardware
4. Setting date and time, screen saver and appearance.
5. Using windows accessories.
6. Settings of all control panel items
7. Search file

MS-Word
1. Creating & Editing Document
2. Formatting Document
3. Use of Auto-text, Autocorrect, Spelling and Grammar Tool,
4. Page Formatting, Page Border, Background,
5. Creation of MS-Word-Mail Merge, Macros, Tables.
6. Practice of Printing, page setup etc.

MS-Excel
1. Creating & Editing Worksheet, Fill Handle
2. Use Formulas and Functions
3. Preparing Charts

MS-Powerpoint
1. Creating, Manipulating & Enhancing Slides,
2. Inserting Organizational Charts, Excel Charts
3. Using Word Art
4. Putting Animations and Sounds
5. Inserting Animated Pictures
6. Inserting Recorded Sound Effect

CS 102 - COMPUTER FUNDAMENTALS
Effective From Session July 2010

Maximum Marks: 35   **Minimum Pass Marks: 12**

UNIT I
Evolution of Computers - Generations, Types of computers, Computer system characteristics, Basic components of a Digital Computer - Control unit, ALU, Input/Output functions and memory, Memory addressing capability of a CPU, Word length of a computer, processing speed of a computer, Computer Classification.

UNIT II
Input/Output Units-: Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Monitors and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Dot Pitch, Video Standard - VGA, SVGA, XGA etc, Printers & types - Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers.

UNIT III
Memory - RAM, ROM, EPROM, PROM and other types of memory, Storage fundamentals - Primary Vs Secondary Data Storage, Various Storage Devices - Magnetic Tape, Magnetic Disks, Cartridge Tape, Hard Disk Drives, Floppy Disks (Winchester Disk), Optical Disks, CD, VCD, CD-R, CD-RW, Zip Drive, flash drives Video Disk , Blue Ray Disc, SD/MMC Memory cards, Physical structure of floppy & hard disk, drive naming conventions in PC. DVD, DVD-RW, USB Pen drive.

UNIT IV
Software and its Need, Types of Software - System software, Application software, System Software - Operating System, Utility Program, Algorithms , Flow Charts - Symbols, Rules for making Flow chart, Programming languages, Assemblers, Compilers and Interpreter, Computer Applications in Business.

UNIT V
 Introduction to **Internet**, Connecting to the Internet Hardware , Software & ISPs, Search Engines, Web Portals, Online Shopping, Email – Types of email, Compose and send a message. Reply to a message, Working with emails.

TEXT BOOKS

Computer Fundamentals – B. Ram – New Age International Publishers

REFERENCES BOOKS
1. *S.K.Basandra**, "Computers Today "**, Galgotia Publications.*
2. Computer Fundamentals – P. K. Sinha – BPB Publication
3. PC Software – Shree Sai Prakashan, Meerut

CS - 201 PROGRAMMING AND PROBLEM SOLVING THROUGH C LANGUAGE

Effective From Session July 2010

Maximum Marks: 35   **Minimum Pass Marks: 12**

UNIT I
Structure of C program, keywords, identifiers, constants, variables, data types, type conversion, Types of operators and expressions, Input and output functions in C.
Decision Statement – IF-ELSE statement, break, continue, goto, switch() case and nested IF statement.

UNIT II
Loop Control Statements – For loop, While loop , Do-while loop and nested loops.
Arrays – Definition, Initialization, characteristics, One, Two, Three and Multidimensional Arrays, sscanf() and sprintf() functions, Working with Strings & Standard Functions.

UNIT III
Pointers – Introduction, features, Declaration, Arithmetic operations, pointers and Arrays, Array of pointers, pointers to pointers, pointers and strings, Void pointers.

UNIT IV
Functions – Declaration, Prototype, Types of functions, call by value and reference, Function with operators, function with decision statements, function with Loop statements, Function with Arrays and Pointers, Types of Storage Classes.

UNIT V
 Structure and Union – Declaration, Initialization, structure within structure, Array of structure, Enumerated data types, Union of structure, Files – Streams and file types, file operations, File I/O, Read ,Write and Other file function.

TEXT BOOKS
1. *E. Balaguruswamy, **"Programming In C "**, TMH Publications*

REFERENCES BOOKS

1. Ashok N. Kamthane, "**Programming with ANSI and Turbo C**", Pearson Education
2. Ashok N. Kamthane et. al., **Computer Programming and IT** (for RTU), Pearson Education, 2011
3. *Gottfried, Schaums Outline Series, **" Programming With C "**, TMH Publications*
4. *Mahapatra, **" Thinking In C "**, PHI Publications*

CS-201P - PRACTICAL ON C PROGRAMMING

Maximum Marks: 50   **Minimum Pass Marks:17**

1. Write a program for swapping two variables without using third variable.
2. Write a program to calculate simple Interest and Compound Interest.
3. Write a program to convert temperature entered into centigrade to Fahrenheit.
4. Write a program to find maximum of three numbers.
5. Write a program to read in a three digit number produce following output (assuming that the input is 539)
    - 5   hundreds
    - 3   tens
    - 9   units
6. Write a program to find sum of digits of accepted number.
7. Write a program to find student grade using IF-ELSE ladder
8. Write a program that prints given three integers in ascending order using IF-ELSE
9. Write a program for simple calculator using switch/case loop.
10. Write a program for print Fibonacci series up to N number.
11. Write a program to find sum of first 50 odd numbers and even numbers.
12. Write a program to find reverse of given number.
13. Write a program to find factorial of accepted number.
14. Write a program to find all prime number between two given numbers
15. Write a program to find minimum, maximum, sum and average of given one dimensional array.
16. Write a program for sparse matrix.
17. Write a program to find addition, subtraction, multiplication of matrix.
18. Write a program to print terms of each of the following series
     i. Sin(x)   ii. Cos(x)
19. Display the following output on the screen

a.	b.	c.
*	1	A
**	12	AB
***	123	ABC
****	1234	ABCD
*****	12345	ABCDE

20. Write a program to read and write a structure.
21. Write a program for factorial function.
22. Write a program to read a string and print its reverse.
23. Write a program to find a^b using Call by reference.
24. Write a program for create, open and append a file.
25. Write a program to copy the contents of one file to another.

CS - 202   COMPUTER ORGANIZATION

Effective From Session July 2010

Maximum Marks: 35   **Minimum Pass Marks: 12**

UNIT I

Number systems – Decimal Number system, Binary number system, Octal & Hexa-decimal number system,1's & 2's complement, Binary Fixed- Point Representation, Arithmetic operation on Binary numbers, Overflow & underflow.

UNIT II

Floating Point Representation, Codes, ASCII, EBCDIC codes, Gray code, Excess-3 & BCD, Error detection & correcting codes, Logic Gates, AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates.

UNIT III

Flip-flops - RS, D, JK & T Flip-flops, Registers, Shift Registers, Multiplexer, De-multiplexer, Encoder, Decoder , Counters.

UNIT IV

Boolean Algebra – Basic Operations and Boolean Law's, Demorgan's theorem, K -Map, Sum of Product & Product of Sum. Combinational & Sequential circuits, Half Adder & Full Adder, Adder & Subtractor.

UNIT V

DMA- control signals for DMA transfers,Block diagram of DMA controller, DMA transfer in a microcomputer system. Instruction Sets – Characteristics and Functions, Types of Operations Addressing modes and formats, Processor Organization, Instruction Cycle, and Register Organization.

TEXT BOOK

Computer Fundamentals – B. Ram – New Age International Publishers

REFERENCE BOOKS

1. William Stallings, "**Computer Organization & Architecture**", Pearson.
2. BARTEE, *"Digital Computer Fundamentals "* TMH Publication
3. *MORRIS MANO, "Computer System Architecture "* PHI

CS - 203 - INTRODUCTION TO INFORMATION SYSTEM
(For Info. Tech. Only)

Effective From Session July 2010

Maximum Marks: 35   **Minimum Pass Marks: 12**

UNIT I

Information concepts, system & modeling concepts, what is information system, business information system, system development, need to learn information system, organization & information system, competitive advantage, performance based information system, careers in information systems.

UNIT II

H/W: Component, processing & memory devices, secondary storage, input and output devices
S/W: Overview of S/W, system & application S/W, programming languages, S/W issues & trends

UNIT III

Data management, data modeling and database models, database management systems, database applications

UNIT IV

Overview of Communication systems, telecommunication, network & distributed processing, telecommunication & application, Use & functioning of the Internet, Internet services, WWW, intranets & extranets, Net issues.

UNIT V

Introduction to E-Commerce, types of e-commerce, e-commerce, e-commerce application, Electronics Payment System, technologically infrastructure of E-Commerce, trends to E-Commerce, strategy for successive E-Commerce
Computer Waste and Mistakes, computer crimes, private work environment

TEXT BOOK:

Principal of Information System: Ralph Stair (Thomson course technology)

CS – 301   DATA STRUCTURE USING C++
Effective From Session July 2011

Maximum Marks: 35   **Minimum Pass Marks: 12**

UNIT I
Introduction to Object Oriented Programming, Object oriented Paradigm, Introduction to C++, Differentiate C & C++, Data types, Operators, Decision making and Loop control statements of C++.

UNIT II
Introduction to Data-structures: Definition of data structures and abstract data-types.
Classification of Data-structures: Linear, Non-linear, Homogeneous, Non-homogeneous, Static and Dynamic data structures. **Levels of Data-structures:** User level(view-level), logical level, Physical level. **Arrays :** Definition, representation of One and Two dimensional arrays in memory(Address Calculation).**Sparse Matrix :** Definition, Memory Representation

UNIT-III
Stack : Definition, Array implementation of stack (static stack) : Operations PUSH, POP, TRAVERSE. **Applications of stack :** Infix, Prefix , Postfix representation and conversion using stack, Postfix expression evaluation using stack, use of stack in recursion implementation.
Queue : Definition, array implementation of queue (static queue) : Operations INSERT, DELETE, TRAVERSE. **Applications of queue :** Network Printer, Simulation of an Airport, Time Sharing System(Round Robin Scheduling) **Comparisons** of array, stack and queue data structures. **Introduction** to Circular queue, priority queue, Double ended queue, multiple queue.

UNIT-IV
Pointers : Introduction, Pointers to structures, malloc, calloc functions. Dynamic memory: New & Delete. **Linked list :** Singly and Doubly Linear link lists, Singly and doubly circular linked list **:** Definitions, operations INSERT , DELETE, TRAVERSE on all these list. (Insertion operation includes – insertion before a given element, insertion after a given element, insertion at given position, insertion in sorted linked list) , Implementations of Stack and Queue using linked list (Dynamic stack).

UNIT-V
Applications of linked list :
String representation & string operations like string length, string reverse, string comparison, string concatenation, sting copying, convert upper-case to lower and vice-versa, substring using linked list.
Polynomial representation and addition of two polynomial using linked list.
Josphus problem, searching using linked list, sorting using linked list.
Simple Searching Algorithms: Linear or sequential search, Binary search, interpolation search using array.
Simple Sorting Algorithms: Bubble sort, Selection sort, Insertion Sort on array.

TEXT BOOK

Data Structures In C++ By Ellis Horowitz, Sartaj Sahani, Dinesh Mehta Galgotia Publications.

REFERENCE BOOKS:

1. Data Structures (Schaume's Outlines) By Lipschutz TMH Publications.
2. Data Structures and Algorithm in C++ By Adam Drozdek Thomson (Vikas)
3. Data Structures using C & C++ By Aaron M. Tenenbaum, Yedidyah Langsam PHI publications.

CS – 302   DBMS FUNDAMENTALS

Effective From Session July 2011

Maximum Marks: 35   **Minimum Pass Marks: 12**

UNIT – I

DBMS Definition, Characteristics of DBMS ,Application and advantages of DBMS, Instances , Schemas and Database States, Three Levels of Architecture , Data Independence, DBMS languages, Data Dictionary, Database Users, Data Administrators.

UNIT – II

Data Models, types and their comparison, Entity Relationship Model, Entity Types, Entity Sets, Attributes and its types, Keys, E-R Diagram, Data Integrity
RDBMS –Concept, Components and Codd's rules.

UNIT – III
Relational Algebra (selection, projection, union, intersection, Cartesian product, Different types of join like theta join, equi-join, natural join, outer join)
Functional Dependencies, Good & Bad Decomposition, Anomalies as a database: A consequences of bad design, Normalization: 1NF, 2NF, 3NF, BCNF, 4NF 5NF.

UNIT – IV
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. Aggregate functions, Joining Multiple Tables (Equi Joins),Joining a Table to itself (self Joins) Functions.

UNIT – V
Introduction to PL/SQL (blocks of PL/SQL, Variables, constants), Control Structure Introduction to Stored Procedures, Functions , Cursor and Triggers

TEXT BOOK
   Fundamentals of Database systems, Elmasri & Navathe, Addison & Weisely, New Delhi.

REFERENCE BOOKS

1.   Database Concepts, H. F. Korth & A. Silverschatz, Tata McGraw Hill, New Delhi
2.   Database Systems, C. J. Date, Prentice Hall of India, New Delhi.
3.   SQL,PL/SQL, The programming language of Oracle. Ivan Bayross,

CS-301P
Practical on Data Structure-I using C++ & DBMS FUNDAMENTALS
Maximum Marks: 50   **Minimum Pass Marks:17**
Data Structure-I using C++

1. Store records of 100 students using array.
2. Representation of upper triangular and lower triangular sparse matrix in array.
3. Push and Pop operation on stack using array.
4. Insertion and deletion operation on queue using array.
5. Insertion and deletion operation on circular queue using array.
6. Program for exchanging the value of two variables using pointers.
7. Linked List creation, insertion and deletion.
8. Sort a Linked List.
9. Implementations of Stack and Queue using linked list.
10. Representation of polynomial using linked list.
11. Double linked list creation, insertion and deletion.
12. Program for linear search.
13. Program for binary search.

DBMS FUNDAMENTALS

1. Assignment to create simple tables , with only the primary key constraint (as a table level constraint & as a field level constraint) (include all data types)
2. Assignment to create more than one table, with referential integrity constraint, PK constraint.
3. Assignment to create one or more tables with following constraints, in addition to the first two constraints (PK & FK)
    a. Check constraint
    b. Unique constraint
    c. Not null constraint
4. Assignment to drop a table from the database, to alter the schema of a table in the Database.
5. Assignment to insert / update / delete records using tables created in previous Assignments. (use simple forms of insert / update / delete statements)
6. Assignment to query the tables using simple form of select statement
    Select <field-list> from table [where <condition> order by <field list>]
    Select <field-list, aggregate functions > from table [where <condition> group by
        i.   having <> order by <>]
7. Assignment to use various additional operator available for conditional statement like between, in any, all etc.
8. Assignment to query table, using set operations (union, intersect)
9. Assignments to query tables using nested queries
10. Assignments to query more than one table using following joins
    a. Cartesian Product
    b. Inner Joins
    c. Equi-Join
    d. Table Aliases
    e. Non-Equi Join
    f. Non-Key Join
    g. Reflexive Join
    h. Natural Join
    i. Outer Joins
    j. Right Outer Join
    k. Left Outer Join
    l. Full Outer Join

CS – 401   OPERATING SYSTEM USING LINUX

Effective From Session July 2011

Maximum Marks: 35   **Minimum Pass Marks: 12**

UNIT – I

Definition of Operating System, Types of Operating System, features of Unix, Basic Architecture of Unix/Linux system, features of Kernel and Shell. *Unix File system* - Boot block, super block, Inode table, data blocks, How Unix/Linux kernel access files, Unix/Linux standard file system.

UNIT –II

Structure of file system, Essential Linux commands - Commands for files and directories creating and viewing files using cat, cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces, chmod with its options, cal,date,who,tty, lp,stty.

UNIT -III

Filters and pipes : head, tail , wc, pr, cut, paste, sort, uniqe, grep, egrep, fgrep ,tee,
The process : shell process, parent and children ,process status, system process, multiple jobs in background and foreground, changing process priority with nice, premature termination of process, Mathematical commands- bc, expr, factor, units.

UNIT -IV

Creating and editing files with VI editor with their command options, Operators, text deletion, text movement, changing text, yanking text, filtering text, the ex mode, moving text from one file to another.
Communication: The bulletin board –news, write, mesg, talk, mail, elm, pine, finger, vacation and connecting to remote machine.

UNIT - V

System administration Common administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships,
Installation of Unix/Linux system– Unix/Linux Installation requirement, complete Procedure steps, Partitioning the Hard drive, System startup and shut-down process, init and run levels. File system mounting, lpstat, backup strategy, installing software on Unix/Linux.

TEXT BOOK

Unix – Syed mansoor sarwar, Robert kortskey **-** Pearson Education

REFERENCE BOOKS:

1. Unix concepts and Application- Sumitabha Das-Tata McHill
2. Using Linux – David Bandel and napier – Pearson Education

CS-401P PRACTICAL ON LINUX

Maximum Marks: 50   **Minimum Pass Marks:17**

1:- Demonstrate the following commands:
   i)   ls
   ii)   cat
   iii)   mkdir
   iv)   cp
   v)   pwd
   vi)   chmod with its options, cal,date,who,tty, lp,stty.

2:- Basic Operations
   i.   Connecting to the system
   ii.   Disconnecting from the system
   iii.   Text and graphic mode
   iv.   Changing your password
   v.   Navigating through the file system
   vi.   Determining file type
   vii.   Looking at text files
   viii. Finding help
   ix.   List the different types of file comparisons command.
3:- Demonstrate the all types of disk related commands.
4:- Demonstrate following commands:-
   i)   md
   ii)   rm
   iii)   file
   iv)   less
5:- Demonstrate the following commands
   i)   head
   ii)   tail
   iii)   wc
   iv)   paste
   v)   sort
6:- Demonstrate the following commands
   i)   unique
   ii)   grep
   iii)   fgrep
   iv)   tee
7:-.List the different types of Mathematical command in UNIX.
8:- Demonstrate the mail command with an example.
9:- Write the program to compare the two strings.
10:- Write the program to move one file to another file.
11:- Write the program to print the following diagram:-
   i)   1   ii)   *   *   *   *
          2   3   *   *   *
          4   5   6   *   *
          7   8   9   10   *

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CS – 402 SYSTEM ANALYSIS AND DESIGN
Effective From Session July 2011

Maximum Marks: 35   **Minimum Pass Marks: 12**

UNIT – I
Define Data, Information, System, System component, System Analysis, Business system concepts, Categories of Information System, Scope of Information System, System Development Life Cycle, system prototype.

UNIT - II
Role of information system, Information system planning , Fact finding techniques, Tools for documenting procedure and decisions, Structured Analysis, Data flow analysis, Features and tools of data flow strategy, Advantage of data flow analysis, Physical and Logical data flow diagrams.

UNIT - III
Data dictionary features, Processes in the Data dictionary, Application Prototype, Steps in prototype methods, Use of Prototypes, A Prototyping example, System Design, Objectives in Designing an information system, software development specification.

UNIT - IV
Elements of the design, Design of output, Design of files, Design of Database Interaction, Design of Input, Design of control, Design of Procedure, Design of Program specification.

UNIT - V
Design of computer output, types of output, how to present information – Tabular format, Graphics format, color presentation, screen design, Design of Input and Output controls, data capture guideline, design of source documents.

TEXT BOOK

System Analysis and Design – Awadh Elias; Galgotia Publication.

REFERENCE BOOK

Analysis & Design of Information system – James A. Senn –McGraw Hill

CS – 403 INFORMATION TECHNOLOGY AND ITS APPLICATION

Effective From Session 2011-2012

Maximum Marks: 35   **Minimum Pass Marks: 12**

UNIT-I

Emerging Trends in IT – Introduction, Electronic Commerce(E-Commerce), Electronic Data Interchange (EDI).

UNIT -II

Mobile Communication, Bluetooth, Wi-Fi, Global Positioning System (GPS), Infrared Communication, Smart Card Technology, Spatial Information Technology, Introduction to GIS.

UNIT -III

Artificial intelligence (AI) and Knowledge Management – Introduction, AI definition, Knowledge-Based Systems, Searching Techniques, Expert Systems, AI Languages, Knowledge Management discovery and analysis.

UNIT -IV

Information Security - Introduction, Malicious Programs, Cryptography, Digital Signature, Firewall, Users Identification and Authentication, Security Awareness and policies, Application areas requiring security.

UNIT -V

Data mining and Data Warehousing – Introduction & Applications, Multidimensional Data Model, OLAP Operations, Data Warehousing Architecture, Data Warehouse Backend Process, KDD vs. Data Mining, Data Mining Techniques, Issues and challenges in Data Mining, Data Mining applications - Case studies.

BOOKS :

1. Introduction to Information Technology - ITL Education Solutions Ltd., Seventh Impression, Pearson Education, 2008.
2. Data Mining Techniques - Arun K Pujari, University Press.

REFERENCE BOOKS :

1. Concepts in computing - Kenneth Hoganson, First Indian Edition, Jones & Bartlett Publishers, Inc., 2010.
2. Artificial Intelligence - Elaine Rich, Kevin Knight, 2nd edition, McGraw Hill, 1991.
3. Computer Networks - Andrew S. Tanenbaum, 4th Edition, Pearson Education.

B.Sc. V SEM
CS-501
Java Programming -I

Theory: Max marks-35   Min marks-12

Unit-I
Introduction to JAVA , from C to JAVA, Byte Code, The JAVA buzzwords: Simple,Object-oriented,Rhobust,secure,portable,Multithreaded,Architecture-Neutral,Interpreted   and   High performance, Distributed, Dynamic, Java Virtual Machine.

Unit-II
Object-oriented programming principles, Creating, Compiling and running Java programs, white spaces, Identifiers, Literals, comments, separators, Java keywords, Data types, variables and arrays. Operators- Arithmetic, Bitwise, Relational, Boolean, Assignment, ?: and Operator precedence, Control Statements: Selection Statements, iterations statement and jump statements.

Unit-III
Introducing classes, general form of class, declaring objects, member of a class, Introducing methods, constructors, this keyword, garbage collection, finalize() method, overloading method, overloading constructors, using object as a parameter & returning objects, Introducing access control, static keyword, final keyword, Nested & inner classes, string classes.

Unit-IV
Inheritance Basics, using super, creating multilevel key, constructor calling, method overriding, dynamic method, dispatch, abstract classes, using final and inheritance.
Packages, access protection, importing packages, interfaces, defining, implementation and applying interfaces, variable in interfaces & inheriting interfaces

Unit-V
Exception Handling fundamentals, using try & catch, multiple catch clauses, nested try statement, use of throw, throws and finally.

Text Books:
Java 2: Herbert Schildt, "The Complete Reference", TATA McGRAW HILL

Reference Books:
1. CAY S. HORSTMANN & GRAY CORNELL Core Java 2: Volume-I Fundamentals;Pearson Education

2. E.BALAGURUSAMY, "Programming with Java", TATA McGRAW HILL

B.Sc. V SEM
CS- 502

Web Technology & Programming

Theory: Max marks-35   Min marks-12

UNIT- I

Client server computing concepts, Distributed Computing on the internet, Introduction Web Pages and HTML, An overview of HTML, adding some structure to a page, formatting Text & Pages, linking Pages to the world, including pictures in a page, creating lists, arranging items within tables, getting feedback with forms, splitting a page into frames

UNIT- II

Site design and Navigation – The Home Page as a Site Guide, Navigator through your site-Graphics, Text, frames, consistency, Introduction to Java Script, JavaScript in web pages, advantages of java script, writing java script into HTML, data types & literal, type casting, creating variables, Array, operators and expressions, java script programming constructs.

UNIT-III

Functions-built in, user define functions, placing text in a browser, dialog boxes. The java script Document Object Model, Handling events using Java script

UNIT- IV

Cascading Style Sheets, Class, using the SPAN tag, External Style sheets, using the DIV tag, using DHTML in Internet Explorer, using DHTML navigator, working with Text-Dynamically changing Content.

UNIT-V

Putting it on web: getting your Domain Name, finding a web space provider, testing responsiveness to your needs, uploading your pages

Text Books:

1. Ivan Bayross ,"**Java Script, HTML, DHTML and PHP**", BPB Publication

2. "**HTML Complete**", BPB Publication

Reference Books:

1. David A. Crowder , "**Creating Web Sites Bible**", Wiley-India

CS-503 Practical Exercise on Java and Web Programming

Maximum Marks: 50   **Minimum Pass Marks:17**

- Create a webpage that prints your name to the screen.
- Create a webpage that print the numbers 1 - 10, each number being a different color.
- Print a paragraph with 4 - 5 sentences. Each sentence should be a different font.
- Print two lists with any information you want. One list should be an ordered list, the other list should be an unordered list.
- 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
- Print some preformatted text of your choosing
- 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
- Display an image that has a border of size 2, a width of 200, and a height of 200.
- Display five different images. Skip two lines between each image. Each image should have a title
- Display an image that when clicked will link to a search engine of your choice
- 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.

- 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.
- Write a Javascript which displays current date and time when page loads.
- 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.
- Create a Webpage using two image files, which switch between one another as mouse pointer mover over the images.
- Create a HTML form that has number of textboxes like First Name, Last Name, Address and Pincode. Write a Javascript code to verify following onclick event of a button :

    1. Pop Up an alert indicating which textbox has left empty and set focus 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 is not numeric value and greater than 6 digits and set focus on it till it is given proper value.

- Write a Javascript, which calculate factorial a number, accepted using textbox and display the result in second textbox. The action performs on click event on button.
- Write a javascript which reverse the number accepted in textbox.

Practical on Java Programming –I

1. Programs using constructor and destructor
2. Creation of classes and use of different types of functions
3. Count the number of objects created for a class using static member function
4. Write programs on interfaces
5. Write programs on packages
6. Write programs using function overloading
7. Programs using inheritance
8. Write a program using exception handling mechanism

B.Sc. VI SEM
CS-601
Java Programming -II
Theory: Max marks-35   Min marks-12

UNIT-I
Applet Basics, Applet architecture, applet life cycle, applet skeleton, applet display methods, requesting repainting, HTML APPLET Tag, passing parameters to Applets.
Swing fundamentals, Labels, Buttons, Borders, Scroll bars, sliders, progress Bars, Managing Components with Panels, Panes & Tooltips, Lists, Text components, working with Menus, Tables and Trees, Dialogs.

UNIT-II
Event handling, event handling mechanisms, event classes, event listener interfaces, using the event delegation model, Adapter classes.

UNIT-III
JDBC (Java Database Connectivity), Design & uses of JDBC, Structured Query Language (SQL) Basics, database URLs, making the connection, executing action commands, query with JDBC, advance SQL types, populating a database, executing queries, metadata, result sets.

UNIT-IV
Servlets: Introduction, life cycle of servlet, servlet API, javax.servlet package, servlet parameters, javax.servlet.http package, handling http requests & responses, using cookies, session tracking, and security issues.

UNIT-V
Java Server Pages (JSP) introduction & overview, implicit objects, scripting, standard actions, directives. Server Side Component Architecture-Session Beans, Entity Beans, Persistent Entity Beans, Transactions.

Text Book:
JAVA 2: The Complete Reference Fifth edition, Herbert Schildt, Tata McGraw hill publications

Reference Books:
1. Java: How to program sixth edition, H. M. Deitel & P. J. Deitel, Preason education

2. Core JAVA 2: Volume II Advanced features, Cay S. Horstmann & Gray Cornell, Pearson education

3. Ed Roman, "Mastering Enterprise Java Beans", John Wiley & Sons Inc., 1999.

4. Swing: A beginner's Guide, Herbert Schildt, McGraw hill professionals

B.SC VI SEM
CS-602
Data & Network Communication
Theory: Max marks-35   Min marks-12

UNIT – I

Data Communication Component, Distributed processing, network criteria, protocol and standards, Line configuration, Topologies, Transmission mode, Categories of networks, Inter-networks.

UNIT – II

The OSI model, Function of the layers, TCP/IP Protocol suite, Analog - Digital data & signals, Periodic and Aperiodic signals, Time and Frequency Domains, Composite Signals.

UNIT – III

Digital to Digital Conversion, Analog to digital conversion, Digital to analog Conversion, Analog to Analog conversion, Digital data transmission, DTE- DCE Interface, EIA449, EIA530, X.21 Standards, Modems, Cable Modem.

UNIT – IV

Transmission media - Introduction, Guided Media, Unguided Media, Transmission Impairment, Performance, Wavelength, Shannon capacity, Media Comparison, Multiplexing – FDM, WDM, TDM, Multiplexing Application, DSL and types of Digital subscriber lines.

UNIT - V

Error detection and correction, types of errors, detection, vrc, lrc, crc, error correction, LAN Project 802, IEEE 802.x, LLC,MAC,PDU, Ethernet , Token Bus, Token Ring. FDDI, LAN Comparison.

TEXT BOOK

Data Communication and Networking – Forouzan – Tata McGraw Hill.

REFERENCE BOOK

Computer networks – Tannenbaum-Pearson Education

CS-603 - Practical on JAVA Programming - II

Maximum Marks: 50   **Minimum Pass Marks:17**

1. Write a program to design a form using components textbox, text field, checkbox, buttons, list and handle various events related to each component.
2. Write a program to design a calculator using Java components and handle various events related to each component and apply proper layout to it.
3. Write a program to display any string using available Font and with every mouse click change the size and / style of the string. Make use of Font and Font metrics class and their methods.
4. Write a program to create a menu bar with various menu items and sub menu items. Also create a checkable menu item. On clicking a menu I tem display a suitable Dialog box.
5. Write a program to increase the font size of a font displayed when the value of thumb in scrollbar increases at the same time it decreases the size of the font when the value of font decreases.
6. Write an Application program / Applet to make connectivity with database using JDBC API
7. Write an Application program/ Applet to send queries through JDBC bridge & handle result.
8. Write a program to demonstrate the use of scroll panes in Swing.
9. Write a servlet for demonstrating the generic servlet class.
10. Write a servlet for demonstrating the generic servlet class.
11. Write a servlet to demonstrate the Http Servlet class using do Get ().
12. Write a servlet to demonstrate the Http Servlet class using do Post ().
13. Write a servlet to demonstrate the cookie.

B.Sc. VI SEM
CS 604
INFORMATION SECURITY
Theory: Max marks-35   Min marks-12

UNIT 1

INTRODUCTION
History, What is Information Security?, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The Security SDLC

UNIT II

SECURITY INVESTIGATION
Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues

UNIT III

SECURITY ANALYSIS
Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk

UNIT IV

LOGICAL DESIGN
Blueprint for Security, Information Security Poicy, Standards and Practices, ISO 17799/BS 7799, NIST Models, VISA International Security Model, Design of Security Architecture, Planning for Continuity

UNIT V

PHYSICAL DESIGN
Security Technology, IDS, Scanning and Analysis Tools, Cryptography, Access Control Devices, Physical Security, Security and Personnel

TEXT BOOK
 Michael E Whitman and Herbert J Mattord, "Principles of Information Security", Vikas Publishing House, New Delhi, 2003

REFERENCES

1. Micki Krause, Harold F. Tipton, " Handbook of Information Security Management", Vol 1-3 CRC Press LLC, 2004.
2. Stuart Mc Clure, Joel Scrambray, George Kurtz, "Hacking Exposed", Tata McGraw-Hill, 2003
3. Matt Bishop, " Computer Security Art and Science", Pearson/PHI, 2002.