

COURSE STRUCTURE SYLLABUS AND SCHEME OF EXAMINATION

FOR

**B.A./B.Sc./B.Com
Computer Applications
2011-12 Onwards**



**Department of Computer Applications
VBS PURVANCHAL UNIVERSITY, JAUNPUR**

STUDY & EVALUATION SCHEME

B.A./B.Sc./B.Com Computer Applications

Effective from Session 2011-2012

Year I

SUB CODE	SUBJECT	TOTAL
BA-101	PC SOFTWARE	35
BA-102	COMPUTER ORGANIZATION	35
BA-103	PROGRAMMING PRINCIPLES & C LANGUAGE	35
BA-104	FUNDAMENTAL OF IT	35
BA-L11	C PROGRAMMING LAB	60

TOTAL-200

Year II

SUB CODE	SUBJECT	TOTAL
BA-201	FUNDAMENTAL OF INTERNET	35
BA-202	C++PROGRAMMING	35
BA-203	DATA AND FILE STRUCTURE	35
BA-204	DATA BASE MANAGEMENT SYSTEM	35
BA-L21	DBMS AND C++ LAB	60

TOTAL-200

Year III

SUB CODE	SUBJECT	TOTAL
BA-301	WEB DESIGN	50
BA-302	SOFTWARE ENGINEERING	50
BA-303	PRINCIPLES OF OPERATING SYSTEM	50
BA-104	PROJECT	150

TOTAL-300

PC SOFTWARE
BSC(Computer Application) 101
YEAR -1

Unit-1

Introduction:

Definition of a PC and its components Concept of software Hardware and firmware.
Types of software difference between a program and software.

Unit-II

MS DOS:

Basic Operating system concept. CUI Concept of files and directories, Booting of the system, Internal and External DOS Commands, Partition of disk, Limitation of DOS.

Unit-III

MS Windows:

Basic Multiprogramming concept, GUI, Folders, Concept of Login and logout. My Document, My Computer, My Network, Recycle Bin, Start Button, Task Bar, Date and Time setting, Calculator, Word Pad System tools.

Unit-IV

MS Office:

MS Word: Opening Creating Saving a document, Editing, Finding and Replacing Texts, Using the Inter (toolbars and Menus).

MS Excel: Concept of Workbook. Opening, Creating, Saving a workbook and organization of worksheets in a workbook. Data entry in cell. Selecting Copying/Moving data in a worksheet.

MS Power Point: Business presentation and their advantages. Opening, Creating, saving a presentation.

Books:

1 Office 2000

2 Sanjay Saxena A first Course in Computers

COMPUTER ORGANIZATION

BSC(Computer Application) 102

YEAR -1

Unit-I

Number System

Introduction, Binary. Octal & Hexadecimal number system. Conversion form decimal to binary octal & hexadecimal etc. Representation of numbers in computer and various character codes.

Unit-II

Logic Gates: Boolean algebra, minterms, maxterms simplification of Boolean function K-Map, simplification half adder, full adder, decoder-encoder, multiplexer, binary counters, flip flops.

Memory Organization

RAM, ROM, Auxiliary memory, Memory Hierarchy, Associative memory, Virtual Memory, Cache memory, Memory management hardware.

Unit- IV

Input-Output Organization

Peripheral devices,. I/O interface, Direct memory access. Type of commands, Modes of transfer. Asynchronous data transfer, Strobe control, Handshaking, DMS transfer, IOP

Unit-V

Processor Organization

Formats, Single Accumulator or organization, General register organization. Stack organization, Addressing modes, data transfer and manipulation.

Book:

1. Computer System Architecture M Mano (PHI)
2. Computer Organization, Vravice Zaky & Hamacher (TMH Publication)
3. Structured Computer Organization Tennenbaum (PHI)
4. Computer Organization, Stallings (PHI)
5. Computer Organization John P Hayes (McGraw Hill)

PROGRAMMING PRINCIPLES AND C LANGUAGE

BSC (Computer Application) 103

YEAR -1

Unit-I

Introduction

Algorithm, Flowcharts, Introduction of Programming Languages, History of C, Basic structure of C Programming Executing C Program

Data Types

Constant variables, identifiers, keywords, tokens, declaration of Variables Assigning values to variables.

Operators

Arithmetic, Relational, Logical, Assignment, Increment, Decrement operators Condition. Bit Wise operators. Arithmetic expressions.

Unit-II

Branching & Looping

Decision making with if, if-else, Switch Statement, GOTO statement, While loop, Do While loop, For Loop Break and Continue statements.

Array

One dimensional array. Two dimensional array, Multidimensional array. Initializing array.

Unit-III

Function

Function declaration, calling a function, The form of C function, Return values and their type, No arguments, no return value, arguments but no return, recursion, Nesting of function.

Pointers

Accessing address of a variable, declaring and initializing pointers. pointer expression. pointer and array. Pointer and function, pointer and structure, pointer to pointer.

Unit-IV

Structure & Union

Structure definition, giving values to members, structure initialization, Array of structure, structure within structure, size of structure Union definition.

Unit-V

File Handling

Defining opening file, closing file, I/O operation on file, random access to file, error handling in file

Books:

- Programming in C Gottfried
- Programming in ANSI C E Balaguruswamy
- Let us CL Y. Kanetkar

FUNDAMENTAL OF INFORMATION TECHNOLOGY

BSC (Computer Application) 104

Year - I

Unit-I

Introduction

Definition of an Electronic Digital Computer, Characteristics, capabilities and limitation of computer, Generation of computers, Types of Computer's, Classification of computers on size, Computer Hardware components and their functions, Characteristics and applications of Computers.

Unit-II

Operating system concepts

Introduction to OS, components of OS, Types of OS multiprogramming, multitasking & time sharing, File & directories & their use in different OS, DOS operating system window operating system, Unix operating system.

Unit-III

Software:

Need Types of software - System software, Application software. Utility programs, Introduction to programming languages. Assembler, Compiler and Interpreter, Programming languages - Assembly language Machine level language. High level language. Application software.

Unit-IV

Data Communication & Networks:

Types of Network - LAN, MAN, WAN, Internet, Intranet. Topologies of LAN - Ring, Bus, Star, Mesh and Tree

Unit-V

Tools for program development

Algorithms Flow charts - symbols. Rules for making flow chart, Types of flow chart advantage and disadvantage, Pseudo codes. Programming techniques - Top Down, Bottom-up, Modular Structured

Books:

- Computer & Languages: A Arora & S. Bansal
- Computer Fundamental: B.Ram
- Information Technology: D. Cyganski & J.A. Off
- Fundamentals of information technology Leon & Leon

FUNDAMENTALS OF INTERNET

BSC (Computer Application) 201

YEAR- II

Unit-I

Introduction What is Internet? Using the Internet. Understanding the Internet Clients and Servers –X Windows and X Clients - Hosts and Terminals. ARPANET - Internet Service providers - Protocol - How does the internet work?

Unit - II

World wide Web: Basic Features - Web Browsers - Web Servers - Search Engines - Hypertext - what is a Browser? - Basic Features of Web Browsers - Working with Internet Explorer.

Unit - III

Mail SMTP - Accessing the Mail System - Mail Header's - Signatures - Mail Addresses - Sending Mail - Reading - Replying to a message - Forwarding and Bouncing Mail - Folders. Overview of Talk Facilities

Unit - IV

A Tour of the Internet Web- Search Engines - Usenet - Gopher - Veronica and Jughead – Anonymous FTP ,Archive - Mailing list -tenet - internet Relay Chat - internet Addressing

Unit - V

Internet S Protocol and Access Overview - Internet Protocol Model Overview Internet Addresses Internet Access Internet Applications

Books:

- Harley Hahn 1997 The Complete Reference 2nd Edition Tata McGraw Hill New Delhi (Unit-1 5-9-1, 60 Unit-2 93-95, 99-106 111, 112-116 400 Unit - 4 - 24-30
- Asnok Lodha 2007 Internet and E-Mail, 1st Edition, Law Point, New Delhi.
- Daniel Minoli 1999 Internet and Intranet Engineering, Tata McGraw-Hill, New Delhi.

C++ PROGRAMMING
BSC(Computer Application) 202
YEAR-II

Unit-I

Introduction:

OOP Paradigm, Basic concepts. Benefits and its applications. Basic A of C++ Concepts of structure and class. Private and public member's tokens data types dynamic initialization reference variable operators, dynamic memory allocation, manipulators, control structure.

Unit-II

Functions in C++

Introduction main () function, prototyping, call and return by reference, inline function, default arguments, function overloading, friend functions, private member functions, various storage classes, static member function.

Unit-III

Constructor and Destructor:

Introduction parameterized constructors, multiple constructors in a class, constructors with default arguments, dynamic initialization of objects, copy constructor, destructors.

Unit-IV

Operator Overloading:

Introduction, definition, method of overloading, Overloading unary and binary operators, manipulation of strings using operators rules for overloading operators.

Unit-V

Inheritance:

Definition base and derived classes' type of inherence and their implementation virtual base classes,

Dynamic Polymorphism:

Introduction pointers to object this pointer pointers to derived class virtual functions pure virtual

Books:

- Object oriented programming with C++ Balaguruswamy
- Object oriented programming Budd
- Object oriented programming with C++ R. Lafore

DATA & FILE STRUCTURE
BSC(Computer Application) 203
YEAR-II

UNIT-I

Introduction

Basic Technology, Elementary data organization. Data structure operations, Algorithm Complexity

Unit-II

Array:

Array Definition Representation and analysis. Single and Multidimensional arrays Address calculation, Application arrays, Character string in C Character string operation. Array as parameters, ordered list, sparse matrix and vectors.

Unit -III

Stack and Queue and Link List:

Static & Dynamic data structure, definition, concepts, algorithms and application of stack & queues, linked stack & queue. linked list operation, doubly linked list.

Unit-IV

Tree and Graph:

Definition & concept of tree, binary tree, conversion of general tree to binary tree, tree-traversal, rotation of tree, balanced tree, graphs. Traversal, connected components & spanning tree, shortest path & transitive closure.

Unit - V

Searching & sorting

Sequential search, binary search, searching algorithms & their analysis. bubble sort, insertion sort, selection sort, analysis of sorting algorithms quick short.

Books:

- E Horowitz & Sahini. "Data Structure" Galgotia
- Tenebaum, "Data Structure & program design in C" PHI
- Lipschutz, "Data Structure" TMH

DATABASE MANAGEMENT SYSTEM

BSC(Computer Application) 204

YEAR-II

Unit-I

Introduction:

An overview of database management system, database system Vs file system, Database system concepts and architecture, data models schema and instances, data independence and data base language and interfaces, Data definitions language, DML, Overall Database Structure.

Unit-II

Data Modeling using the Entity Relationship Model:

ER model concepts, notation for ER Diagram mapping constraints, keys, Generalization, aggregation reduction of an ER diagrams to tables, extended ER model.

Unit-III

Relational data Model and Language: Relational data model concepts, integrity constraints: entity, integrity, referential integrity Keys constraints. Domain constraints relational algebra.

Unit-IV

Introduction to SQL: CharacteristicA of SQL Advantage of SQL, SQL data types and literals. Types of SQL commands SQL operators and their procedure Tables Queries and queries Aggregate functions. Insert update and delete operations Joins Unions. Intersection. Minus.

Unit-V

Data Base Design & Normalization: Functional dependencies, normal first, second, third normal forms BCNF Inclusion dependences loss less join decompositions.

Text Books:

- Date CJ An Introduction To Database System Addison Wesley
- Korth, Silbertz, Sudarshan Database Concepts McGraw Hill
- Elmasri, Navathe. "Fundamentals of Database Systems", Addison Wesley
- Leon & Leon "Database Management System". Vikas Publishing House.

WEB DESIGN

BSC(Computer Application) 301

YEAR -III

Unit-I

Overview of Internet:

Introduction to Internet and WWW internet protocols like TOPIP http, telnet and ftp, URL, email, domain name Web browsers. Search Counters, Chat & Bulletin Board Services.

Unit-II

Principles of Web Design: Key issues to be considered in web site design.

Structure of a web page:

Introduction to HTML. Elements of HTML syntax Head and Body sections, Building HTML documents, Inserting text, images, hyperlink, Backgrounds and Color Control, ordered and unordered lists content layout & presentation. HTML Tags Use of Different HTML tags in web pages, Table & its attributes, Frames

Unit-III

HTML editor & tools, Use of different editors & tools, Netscape communicator and Microsoft FrontPage etc.

Graphical and Animation Techniques: Use of Different graphical and animation tools like adobe Photoshop Gif animator etc.

Unit-IV

Interactivity: Client Server Mode, static & dynamic WebPages, creating form CGI, role of databases in web application

Unit V

Web technologies:

Overview of various web technologies and user application like javaScript, active server pages, macromedia flash, embedding java applets in a web page etc.

Books:

- C Xavier," World wide web design with HTML", Tata Mcgraw Hill
- Joel Sklar, "Principles of web design, web warriors series.
- Rick dranell, "HTML-4 unreleased, Tech media
- Shelly powers" Dynamic Web publishing Unleashed, Techmedia

SOFTWARE ENGINEERING
BSC(Computer Application) - 302
YEAR-III

Unit - I

Introduction

Introduction to Software Engineering Importance of Software, The Features of software, Software development life-cycle,

Unit-II

Software requirement specification:

Software process, Water Fall Model, Incremental Model, Prototyping Spiral Model, Role of Management in Software development, Role of matrices and measurement, Problem analysis, Requirement specification Monitoring and Control.

Unit-III

Software Design:

Design principles, Problem partitioning, Abstraction, Top-down and Bottom-up design, Structured approach. Functional versus Object oriented approach, Design specification and Verification, Monitoring and Control. Cohesiveness, Coupling, Forth generation techniques, Functional independence, Software architecture.

Unit - IV

Coding:

Top-down and Bottom-up programming, Structured programming, Information hiding, Programming style and internal documentation.

Testing: Testing principles, Levels of testing, Functional Testing, Structural testing, Test place, Test case specification, Reliability assessment, Software testing strategies, Verification and Validation, Unit testing, Integration testing, Alpha and Beta testing, system testing and debugging.

Unit-V

Software project management

The Management spectrum-(The people, The product, the process, the project), Cost estimation, project scheduling, Staffing, Software Configuration management, Structured Vs Unstructured maintenance.

Book:

- Pressman, "Software Engineering: A practitioner's approach", TMH
- Pankaj Jalote, "Software Engineering", Narosa
- Ghezzi, Carlo and Others, "Fundamental of Software Engineering" PHI.

PRINCIPALS OF OPERATING SYSTEM

BSC(Computer Application) 303

YEAR-III

Unit-I

Introduction

Operating system and functions, evaluation of operating system, batch, interactive, time-sharing & real time systems, system protection, system components, system structure, operating system services.

Unit-II

Concurrent process

Process, State transition, interrupts, process control block, principle of concurrency, producer-consumer problem, critical section,

Unit-III

CPU scheduling

Scheduling concept, performance criteria, scheduling algorithms such as FCFS, SJF, Round-Robin.

Deadlock

System Model deadlock characterization, prevention.

Unit-IV

Memory Management

Real Storage resident monitor multiprogramming with fixed partition, Multiprogramming with variable partition multiple base register, paging segmentation, paged segmentation, virtual memory concept demand paging, page replacement algorithms allocation of frames, thrashing, cache memory organization, impact on performance

Unit-V

UNIX/LINUX

Unix system kernel & Utilities, File & Directories, Single & compound statement, basic commands, Bourn shell, kern shell & C shell, Shell meta characteristic, shell variables & scripts, environment, integer arithmetic & string manipulation decision making.

Books:

- Operating system: Galvin
- Operating system: Pearson