B.A.C.A. Semester-I
Computer Fundamentals and Applications

Unit - I
Introduction to computers, Evolution of personal computers; Generation of computers; Uses of computers in modern society. The family of computers; Elements of a computer processing system- Hardware & Software, various categories of software; Computer Organization Overview-CPU, I/O devices, storage devices and media; Various type of displays and other peripherals used in PCs. Memory Introduction, Classifications- Volatile Memory and Non-Volatile, Flash Memory, ROM, RAM, EPROM, PROM, EEPROM other types of memory. Computer arithmetic and number system (ASCII & EBCDIC) and logic gates

Unit – II

Unit- III
Text editors and word processor software packages; Operative familiarization with anyone package like MS-Word; Concept and use of spreadsheet; Operation and use of MS-Excel. Basics of Database; Table; Records and Fields; Data entry and query processing; Operative principles of MS- Access; Document formation and presentation through MS- Powerpoint.

Practical:
Practical in computer laboratory on MS-Office.

References:
Semester-II
Programming with C++

Unit - I
An overview of C++, Compiler and Interpreter, Data Types, Constants, Variables, Operators and Expressions, Input/Output, Control Statements, Looping, Functions, Arrays, Strings, Pointers, Structures, Unions, Common Programming errors. String manipulation functions and other standard library functions from stdio.h, stdlib.h, conio.h, ctype.h, math.h, string.h, process.h.

Unit – II
Introduction to Object Oriented Programming in C++, Classes and objects, Friend Functions, Inline Functions, C++ Input/Output, Static Data Members and Functions, Arrays of Objects, Pointers to Objects, This pointer, References, C++ dynamic Allocation operators.

Unit – III
Function Overloading, Constructors and Destructors, Overloading Constructors, Copy Constructors, Operator Overloading. Inheritance, Virtual class and Virtual functions, Abstract class, Exception Handling.

Practical:
Practical in computer laboratory on C++.

References:
1. Introduction to C By E.Balaguruswamy
2. Object Oriented Programming By Robert Lafore
3. Object Oriented Programming By E.Balaguruswamy
4. Object Oriented Programming By D. Parasons, BPB Publication
5. C++ Complete Reference By Jennifer Ackerman Kettell
Semester-III
Introduction to DBMS & ORACLE

Unit-I
Introduction
Concept of Data, Information, Record, File, Data Base, Data Abstraction, Instance and Schema, Data Independence, Data Definition Language, Data Manipulation Language, Data Control Language, Data Base Management System, Functions Of DBMS, Features of a Database System.

Unit-II
Database System Concept and Architecture
Three Level of Architecture-External Level, Internal Level, Conceptual Level, Distributed Database System, Client-Server Architecture, Introduction to Hierarchical, Network and Relational Approaches.

Unit-III
Data Base Design and Introduction to ORACLE
Basic Definitions-Entity, Entity Type, Entity Set, Keys- Primary Key, Secondary Key, Candidate Key, Foreign Key, Composite Key, E-R Diagram, Functional Dependencies, Normalization: First Normal Form, Second Normal Form, Third Normal Form. Oracle Data Type, Making Simple Queries through SQL Select Statement, Data Definition Language, Data Manipulation Language, Data Control Language. Character Function, Numeric Function, Aggregate Function,

Practical in the Lab (35 Marks)
Using Oracle RDBMS to create and design a Database and Query information from the Database

References:
4. Date,C.J.(2000), Introduction to Data Base System(Vol1, Seventh Edition)
System and Information System

Unit-I

Concept of Information System:

Unit-II

Organizations and Information Systems:

Unit-III

Information System in Enterprise and Decision Making:

References:

Lab: 35 Marks
Use of Spread Sheet as a Decision Making Tool.
Semester-IV
System Analysis & Design

Unit-I

System Development Life Cycle:
Recognition of need, Feasibility Study, Analysis, design, implementation, post-Implementation and maintenance, Prototyping, Role of System Analysis.

Unit-II

System Analysis:
System Planning and the initial investigation, Information gathering, Cost/Benefit Analysis, System Requirement Specification, Tools of Structured Analysis.

Unit-III

System Design & Testing:

References:

- System Analysis & Design, G.B. Shelly & T.V. Casbman, Person, 2002

Project: 35 Marks
Project report for a Software Development Project with following documents:

- System requirement Specification
- System Design Document
- Testing Plan
- Project Plan
Introduction of OS & Networking

Unit- I

Data Communication and Transmission Media:

Unit- II

Basic of Computer Networks
Networking of Computer.- Advantages and disadvantages of computer networking.
Types of Networks - LAN, MAN, WAN.
Network Topology – Star, Ring, Bus, Tree.
Data Communication Components: Modem, Routers, Bridges, Hubs, Switches, Gateway.
Reference Models - The OSI reference model, the TCP/IP reference model.

Unit III

Operating System
Memory Management: Logical versus Physical Address space, Swapping, Contiguous allocation, Introduction to Paging, Fragmentation, Segmentation, Virtual Memory;
CPU Scheduling: Basic Concepts , Preemptive and Non-Preemptive scheduling, Scheduling algorithms(FCFS, SJF, Round Robin)
References:

1. Computer Networks, Tannenbaum, PHI
2. Data Communication & Networking, Forouzan, TMH
3. Operating System Concepts, Silbershatz Galvin
4. Modern Operating System, Andrew S. Tanenbaum
Semester-V
Data Structure

Unit-I

Introduction to Data Structures
Data Structure-Definition & classification, Overview of various types of Data Structures, Basic terminology, Concept of Data Type-Primitive and Composite Data type, Abstract Data type; Introduction to Algorithm, Analysis of Algorithm with different Notations.

Unit-II

Arrays and Stack:
Arrays-Linear and Multi-dimensional array representation in memory, insertion & deletion operation, addition and multiplication of two matrices. Stack- Static and Dynamic representation, Operation on stack, application on stack, Evaluation of Expression: infix to postfix, infix to prefix and vice versa using stack.

Unit-III

Queues and Linked List:
Queues-static and dynamic representation, operation on queues, priority queue, circular queue, application of queues. Linked list representation, creation, Insertion(Beginning, Middle, End), Deleting (Beginning, Middle, End) and Traversing.

Practical in the Lab:
Implementing the above concepts of data structures, taught in the class, using C/C++.

References:
1: C.S French (2001), Data processing, Paper Back
2: D.Samanta (2008), Classic data structures, Prentice Hall of India, New Delhi
3: Michael T. Goodrich(2001), Data Structures and Algorithm in C++, Willey
4: Y Langsam, M J. Augenstein, AM Tanenbaum(2006), Data structures using C and C++” Prentice Hall of
Visual Basic and Multimedia Application

Unit-I

Visual Basic 6.0:
Integrated Development Enviroment, Elements of User Interface, Visual Development and Event Driven Programming: Methods and Events.

Visual Basic Language:
Variables, Arrays, Constants, Collections, Procedures, Arguments, Function Return Values, Control Flow Statements and Loop Statements.

Working with Forms:
The Appearance of the forms: Loading of the forms and showing and hiding forms, controlling one form within another form, startup form; designing Menus, Building Dynamic forms at run time. List box control properties, Methods, Indexing with the listbox Control, Searching a sorted list, Control Box Properties, Methods.

Unit-II

Multimedia Technologies:
Introduction to Internet Technologies and Applications: HTML, CSS, DHTML.
HTML Tags: Head, Title, Frameset etc. Creating links and adding an image on web page. Adding audio and video file to a webpage, designing forms using HTML, Adding, linking and importing a CSS on webpage. Making a website Dynamic using DHTML - VB Script etc.

Unit-III

Introduction to OSI and TCP/IP Model:
Webserver and Websites, Website management using FTP, Telnet, Tools for Remote Webpage Updation

Practical in Lab and Assignments:
Students are required to implement the VB 6.0 Concept in the lab and develop a small Website using the above web development tools.

References:
1. Petroutsos, Evanglelos “Mastering in Visual Basic 6.0” (BPB Publication)
2. Drew “Fundamental of Multimedia”, PHP
4. Mack, E. Stephen; Platt, Janan “” HTML 4.0 (BPB Publication)
B.A.C.A. Semester-VI
ASP.NET
Unit-I

ASP.NET an Introduction:

Unit-II

ASP.NET Controls:
HTML Controls, Web Controls, Standard Controls, Validation Controls, Navigation Controls, Data Bound Controls, Data Source Controls, data List, data Grid and List View Controls, working with Dataset.

Unit-III

Pages & Session:

Lab: 35 Marks
Working with Various Controls and Data Binding.
Develop a Website using ASP.NET Technology.

References:

- Beginning or Professional ASP.NET 4.0 with C# or VB Wrox Publication.
- Beginning or Professional ASP.NET 4.0 with C# or VB Aprexx Publication.
- ASP.NET Unleashed by Stephen Walther

Project