B.Sc. (Computer Science) SYLLABUS

SEM I

S. No.	Paper Code	Paper Name
1.	BSC101	Information Technology and Programming Concepts
2.	BSC102	Elements of System Analysis and Design
		Elective Paper

SEM II

S. No.	Paper Code	Paper Name
1.	BSC201	Programming & Problem Solving Through C
2.	BSC202	Practical (C, MS-Office)

SEM III

S. No.	Paper Code	Paper Name
1.	BSC301	Data Structure using C
2.	BSC302	Practical (Data Structure)
		Elective Paper

SEM IV

S. No.	Paper Code	Paper Name
1.	BSC401	Multimedia Applications
2.	BSC402	Digital Electronics

SEM V

S. No.	Paper Code	Paper Name
1.	BSC501	Introduction to DBMS (SQL)
2.	BSC502	Microprocessor and Assembly Language Programming
3.	BSC503	Practical (DBMS, Microprocessor)
		Elective Paper

SEM VI

S. No.	Paper Code	Paper Name
1.	BSC601	Programming and Problem Solving through Visual basic
2.	BSC602	Introduction to E-Commerce
3.	BSC603	Practical (VB) , Project

SEMESTER I

PAPER CODE: BSC 101
PAPER NAME: Information Technology and Programming Concepts

UNIT -I

Introduction, Characteristics of Computers, Block diagram of computer
Types of computers and features: Mini Computers, Micro Computers, Mainframe Computers, Super Computers(02).Types of Programming Languages: Machine Languages, Assembly Languages, High Level Languages(02), Translators:- Assembler ,Compiler, Interpreter and Linkers(01),Operating system concepts, Types of OS, Functions of OS(03).
Lectures : 08

UNIT -II

I/O Devices:- Keyboard, Mouse, Scanner, Light pen, Trackball, Joystick, Barcode reader, OCR, OMR, MICR, Digitizer; Monitor, Printer, Plotter etc., (02) Memory concepts, Types of Memory (Primary and Secondary):-RAM,ROM and its types, Secondary Storage Devices (Magnetic tape, Magnetic Disk(FD, HD),Optical Disk(CD,DVD), Pen drive) (04).Data Organization: Drives, Files, Directories(01).
Lectures : 07

UNIT -III

Basic elements of a communication system, Data transmission modes, Data Transmission speed, Data transmission media(02),Digital and Analog Transmission, Network topologies, Network Types (LAN, WAN and MAN), Client and Servers , Intranet, Extranet.(02)
Internet: Introduction to Internet, Terminologies related to Internet: Protocol, Domain name, IP address, URL, World Wide Web, Connecting to the Internet,(04)
Lectures : 08

UNIT -IV

Various services on Internet: E-mail, FTP, Telnet, Chat, Instant Messaging, ISP , choosing an ISP.(03)
Problem solving methods, Problem analysis, Flow charts, symbols, Decision tables, Pseudo codes and Algorithm with examples.(04)
Lectures : 07

Total Lectures:30

Reference Books :

1. Fundamental of Computers – By V. Rajaraman B.P.B. Publications
2. Fundamental of Computers – By P. K. Sinha

PAPER CODE : BSC 102
PAPER NAME: Elements of System Analysis and Design

UNIT -I

System concept, Definition, Characteristics and Elements of System,(03) **Types of System:**-Abstract and Physical system, Open and Closed System, Deterministic and Probabilistic System, Man made Information System, System Models and types of models, System environment and boundaries,(03) **system analyst** ,role of system analyst, qualification and responsibilities of System Analyst(02).
Lectures:08

UNIT -II

System development life cycle and its various phases:-Preliminary investigation, determination of system requirements, Development of software, System testing, Implementation, evaluation and maintenances,(04) System Flow chart and its symbols **Software Crisis**: From programmers' point of view, from users' point of view. (02)
Lectures:06

UNIT -III

System Analysis:-System Planning, Information Gathering and its Tools,(02) Feasibility study ,steps in feasibility analysis , its report and importance,(02) various tools of Structured Analysis:- data flow diagrams, Data Dictionary, Decision Tree, Structured English, Decision Table(02),Cost /Benefit Analysis, Introduction of Control Flow Graph, CPM, PERT chart, Gantt chart.(02)
Lectures:08

UNIT -IV

System design:-process modeling, logical and physical design, design methodologies(02) **data base design**:-objectives of database,Types of relationship, types of data structure, (02)**system testing and quality assurance**:-reason of system testing,nature of test data,Test plan,types of System test ,Quality assurance goals in SDLC,levels of Quality Assurance(02) ,**implementation and software maintenance**:-Introduction of implementation,primary activities of a maintenance procedure and reducing maintenance cost(02).
Lectures:08

Total Lectures:30

Text Books :

1. System Analysis and Design by Elias M. Awad.
2. Software Engineering by Pressmen.
3. System analysis and design By Kendell & kendell

SEMESTER II

PAPER CODE: BSC 201
PAPER NAME: Programming & Problem Solving Through C

UNIT -I
Fundamental of C programming, Overview of C, History and structure(02), C Character set, Identifiers and Keywords, Data types, Data types declarations, Constants and variables, expressions and statements and symbolic constants Basic I/O (03), Library functions, header files, Preprocessor command, #include define preparing and running a complete C program.(03)
Lectures:08

UNIT -II
Operator and expressions Arithmetic unary logical bit-wise, assignment , and conditional operators library functions (03)Construction of loops and implementation control statements; (02) While Do-while for statements nested loops If-else, switch, break, continue and go-to statements, comma operator(03).
Lectures:08

UNIT -III
Functions: functions prototypes, function call, call by value, call by reference, Recursion (03), storage classes: automatic, external and static variables (02), pointer: Declarations, Passing to a function, Operations on Pointers.(02)
Lectures:07

UNIT -IV
Arrays one dimensional and two dimensional arrays, Arrays of pointers,(03) Unions Declarations(01), File handling: Open, Close, Create, Process, Unformatted data file.(03)
Lectures:07

Total Lectures:30

Reference Books:

1. C in Depth by S.K.Srivastava, Deepali Srivastava
2. Let us C by Yashvant Kanetkar (BPB)
3. Programming in ANSI C – E. Balaguruswami (McGrewHill)

PAPER CODE: BSC 202
PAPER NAME: Practical (C, MS-Office)

SEMESTER III

PAPER CODE: BSC 301
PAPER NAME:Data Structures Through C Language

UNIT -I
Structure, definition, and application, Lists, Basic Terminology(02), Static Implementation of Lists, Pointer Implementation of Lists(02), Insertion in a list, Deletion from a list, Storage of Sparse, Arrays using Linked List, Doubly Linked Lists, Circular Linked List(03).
Lectures:07

UNIT -II
Defining Stack and Queue, Stack Operations and Implementation(02), Array Implementation, Pointer Implementation, Stack Applications(03), Convert Number Bases by Using Stacks, Infix to Postfix Conversion, Queue Application, Priority Queues(02).
Lectures:07

UNIT -III
Defining Graph, Basic Terminology, Graph Traversal, Depth First Search (DFS), Breadth First Search (BFS), Shortest Path Problem(02), Minimal Spanning Tree, Binary Trees, In order Traversal, Post order Traversal(02), Preorder order Traversal, Binary Search Trees, Operations on a BST, Insertion in Binary Search Tree, Deletion of a node in BST, Search for a key in BST, Height Balanced Tree(05).
Lectures:09

UNIT -IV
Searching and Sorting techniques (02), Sequential Search, Binary Search, Internal Sort, Insertion Sort, Bubble Sort(02), Quick Sort, 2-way Merge Sort, Heap Sort(03).
Lectures:07

Total Lectures:30

Reference Books:

1. Data Structure through C- G.S.Baluja
2. Data Structures Using C- Aaron M. Tannenbaum

PAPER CODE: BSC 302
PAPER NAME: Practical (Data Structure)

SEMESTER IV

PAPER CODE: BSC 401
PAPER NAME: Multimedia Applications

UNIT -I

Multimedia concepts, Introduction to basic techniques of multimedia development and delivery, Process of multimedia Production, (03)Hardware/Software requirement for multimedia, (02)Components of multimedia: Textual information, images, Animation, Digital Audio, Digital Video, Planning and Design of Multimedia, Production of multimedia, Distribution of Multimedia. (03)

Lectures:08

UNIT -II

Multimedia development Tools, Features of Software required for Multimedia: (01) Integrating Multimedia Elements, Script Language Programs, Icon based programs, DLL, hypertext, Cross Platform Capability, Runtime Player for distribution, (02) Authoring tools: Author ware, Everest Authoring System, Icon Author, ImageQ, Quick Time.(04)

Lectures:07

UNIT -III

Element of Hypertext: Nodes, Links, Annotations, Buttons, Editors, Browsers, Trails; (01)Application of Hypertext: Business Applications, Computer Applications, Educational Applications, Entertainment and Leisure Application; (02) Planning Multimedia Program/Application: Goal, Outlining, Logic Flowchart, Program Story board, Creation of Building blocks, (02) Copyright issue and management. (02)

Lectures:07

UNIT -IV

Developing multimedia building blocks: Text, Graphics, Sound and Video in Multimedia Applications, (03) Application areas of Multimedia: Entertainment, Edutainment, Business Communications, Public Access, Knowledge transfer; (02) Multimedia-an interactive system for Teaching and Learning: Simulations, Composition; Multimedia-as a technological challenge for developers(03)

Lectures:08

Total Lectures:30

Reference Books:

1. Principles of Interactive Multimedia By Elsom Cook – TMH
2. 3D Computer Animation – Vince – Addison Wesley

PAPER CODE: BSC402
PAPER NAME: Digital Electronics

UNIT-I

Binary System : Digital Computers and digital systems , Number system(02), Binary Arithmetic , Signed binary numbers, complements : r's complements(2's complement, 10's complements), (r-1)'s complements (1's complement, ,9's complement) , Subtraction using 1's complement and 2's complement method , Binary codes ,Logic gates: Inverter, AND, OR, NOR, NAND, XOR, XNOR, De-Morgan's Theorems, Boolean algebra, Canonical and standard forms , Karnaugh Map (03) , Introduction to IC Digital logic families(RTL, DTL, TTL, ECL, MOS and CMOS) and characteristics (Fan-In ,Fan-out, Power Dissipation , Propogation delay ,Noise margin) of IC Digital logic families (TTL , ECL , CMOS) (02)
Lectures: 07

UNIT-II

Combinational and sequential Circuits : Half adder, Full adder , Half Subtractor, full Subtractor, Serial and parallel adder (03) , Code conversion circuits(01) , Parity generator and checker (01) , Comparators(01), Encoder, Decoder, Multiplexer, De-multiplexer(02)
Lectures: 08

UNIT-III

Flip flops: RS latches, RS-Flip flop, D-Flip flop, T-flip flop, JK-Flip flop, JK Master slave flip flop, edge triggered and pulse triggered flip flops (04), Registers: Simple Register, Shift registers, Types of Shift Register, Construction and timing diagram of 4-bit Shift Register (03).
Lectures: 07

UNIT-IV

Counter - Binary counter, characteristic of counter-(Synchronous/Asynchronous, Modulus/length of counter, UP/DOWN counter, Speed of Asynchronous counter) Construction of full length and Non full length, UP/DOWN Synchronous counter using 2, 3 and 4 FF, Ripple counter. Design of different MOD counter, Construction of Asynchronous counter, Ring Counter, Johnson Counter(04) .
Random Access Memory, Read Only Memory, Types of Read Only Memory(02), Multivibrators-Astable, Monostable, Bistable, Schmitt Trigger, Timer (02)
Lectures: 08

Total Lectures: 30

Text Books:

1. Morris Mano, Digital Logic, 3rd Edition, Prentice-Hall of India Private Limited, 1999.
2. R.P. Jain, Digital Electronics

Reference Book:

1. William Stallings, Computer Organization and Architecture, 4th Edition, Prentice Hall of India Private Limited

SEMESTER V

PAPER CODE: BSC 501
PAPER NAME: Introduction to DBMS (SQL)

UNIT -I

Data, Information and knowledge, introducing database and different kinds of database users, concept or a database, interacting with a database,(02) architecture of a database, using relational databases, basics of relational databases, using relational databases(02), identifiers for relations, characteristic of database, database system concepts and data independence, content of data dictionary, data administration function.(02)

Lectures: 06

UNIT -II

Traditional data model – ANSL/SPRC, 3-level architecture, over view, of three traditional models – hierarchical, network and relational models, comparison of these models(01), ER model(02), File organization technique – random, file organization technique, multi key file organization technique, Indexing (02), concurrency control, database security, database recovery(03)

Lectures:09

UNIT -III

Data Normalization (02) Introduction to SQL: Characteristics and advantages, SQL Data Types and Literals, DDL, DML, SQL Operators (02), Tables: Creating, Modifying, Deleting, Views: Creating, Dropping, Updating using Views SQL DML Queries: SELECT Query and clauses, Set Operations, Predicates and Joins,.Aggregate Functions, Nested Queries(04)

Lectures:08

UNIT -IV

Specifying constraints and indexes in SQL, data manipulation, multiple table operations (03)
Database Modification using SQL Insert, Update and Delete, T-SQL: Cursor, concept of Stored Procedures, Functions and Triggers (04)

Total Lectures:07

Text Book:

1. R. Elmarsi and SB Navathe, "Fundamentals of Database Systems", Addison Wesley,4th Ed., 2004

Reference Books:

1. Abraham Silberschatz, Henry Korth, S. Sudarshan, "Database Systems Concepts", 4th Edition, McGraw Hill, 1997.
2. Jim Melton, Alan Simon, "Understanding the new SQL: A complete Guide", Morgan Kaufmann Publishers, 1993

PAPER CODE: BSC 502
PAPER NAME: Microprocessor And Assembly Language Programming

UNIT -I
Computer Elements: Memories- Volatile and Non-volatile memories, Magnetic memories, DRO, NDRO system. Semiconductor memories: RAM, ROM, SRAM, DRAM, EPROM. Addressing of memories: MAR, MAD & MDR Hexadecimal addressing.
Lectures: 05

UNIT -II
Introduction to Microprocessors and microcomputers, Study of 8 bit Microprocessor, 8085 pin configuration, Internal Architecture and operations, Bus organization, interrupts, Stacks and Subroutines, various data transfer schemes, timing diagrams.
Assembly language programming of 8085.
Lectures: 07

UNIT -III
Difference between 8085 and 8086, Block diagram and architecture of 8086 family, pin configuration of 8086, Minimum mode & Maximum mode operation, Bus Interface Unit, Register Organization, Instruction Pointer, Stack & Stack pointer, merits of memory segmentation, Execution Unit, Register Organization, Addressing modes, Interrupts. I/O mapped and memory mapped I/O, Direct memory addressing.
Lectures:**10**

UNIT -IV
Assembly language programming of 8086.
Introduction to 32 and 64 bit processors and latest technologies. Introduction to microcontrollers(8051). Introduction to embedded system.
Lectures: 08

Total Lectures:30

Reference Books:
1 Microprocessor 8085-by R.S. Gaonka
2. Microprocessor 8085 and 8086 by B.RA
3. 8086 Microprocessor by Kenneth J.Aylya

PAPER CODE: BSC 503
PAPER NAME: Practical (DBMS, Microprocessor)

SEMESTER VI

PAPER CODE: BSC 601
PAPER NAME: Programming and Problem Solving through Visual basic

UNIT -I

Basic of Visual Basic Language Requirements of VB6.0 Toolbars Menu bars, file, edit.., view, project, format, tools, Add-Ins Menu, Project Explorer, Properties Windows, Code, form (02), debug windows, Immediate debug window, local debug window, watch debug window, tool box window, Adding removing custom control to tool box, creating and saving a project (02), Visual Development and event driven programming, OOPS, Object and classes, Properties, Method and events.(03)
Lectures:07

UNIT -II

Operators, Control Flow, Statement, Decision making statements, select case statement, iteration: for loop structure, do-loop, do-until loops, do-while, while-wend, with-end with statement, arrays: accessing array elements, double dimensional or multidimensional array, dynamic arrays, redimensioning an array Bound and Unbound statement, option base statement, collections.(04) Procedure and Functions, Procedures and function: types of procedures, sub procedure general procedures event procedures function procedures, creating new procedures, selecting existing procedures, calling functioning procedures, calling procedure in others modules, passing argument by value, passing argument by reference (04)
Lectures:08

UNIT -III

Interacting with the basic controls. Forms, controlling one form within another – MDI forms, command buttons, label control, text box controls, computing the key, list box control, combo box control, lab assignments.(03**)** More controls. Radio buttons, scroll bars, example program, timer control, running lights application, image control,(03) drive list box, searching a drive, the directory list box, file list box copping the file, deleting the file, renaming a file, moving a file.(02)
Lectures:08

UNIT -IV

Creating menu based application, menus and the menu editor, designing menus, programming menus commands, creating a menus control array, dialog boxes, message box, visual basic constant for the message box, Using the input box.(04).Database connectivity though Visual Basic6.0, Introduction to AciveX controls: Rich text box control, status bar control, common dialog control, list view control, tree view control, toolbar, month view, Date time Picker control. Using new Active X control(03)
Lectures:07

Total Lectures:30

Text Books:

1. E. Petroutsos, “Mastering Visual Basic 6.0”, BPB Publications, 1998.
2. Perry, Greg, “Teach Yourself Visual Basic 6 in 21 Days”, Techmedia, 1998.

Reference Books:

1. E. Petroutsos, “Mastering Database Programming with Visual Basic 6”, BPB Publications, 2000
2. Norton Peter, “Peter Norton’s Guide to Visual Basic 6”, Techmedia, 1998.

PAPER CODE: BSC 602
PAPER NAME: Introduction to E-Commerce

UNIT- I

Introduction to E-Commerce: Definition of E-Commerce, Scope of E-Commerce, driving forces for E-Commerce (02), Issues in implementing E-Commerce, E-Commerce Applications, Advantage- Business & Customer, Disadvantages (02), framework for understanding e-business, Classification of E-commerce, E-commerce Business Models (03).
Lectures:07

UNIT -II

Firewall: Types, Features, Characteristics(02), Electronic Data Interchange (EDI): Concept, Components, Differences between traditional EDI & Paper EDI, Advantages of EDI(03), Business Application of EDI, EDI Communication Process, EDI Security, Digital Signature(02).
Lectures:07

UNIT -III

Electronic Payment System: EPS Models, EPS Processing, Digital token based(01), debit card, smart card, Credit Card, risk in electronic payment system(03), E-auction: Introduction, Overview, Electronic trading(01), Online Banking: origin, advantages, disadvantages, Services (03).
Lectures:08

UNIT -IV

Web Security factors, E-Commerce security threats, security schemes, Protocols, Digital Certificates(03), Cyber law in India, Supply Chain Management (SCM): Components and issues(02), Customer Relationship Management (CRM): definition, Components, Benefits, ECRM: concept, impact, ECRM v/s CRM(03)
Lectures:08

Total Lectures:30

Text Book:

1. E-Commerce - Ritendra Goyal

Reference Books:

1. E-Commerce – Bharat Bhaskar
2. E-Commerce -- CSV Murthy

PAPER CODE: BSC 603
PAPER NAME: Practical (VB), Project