**B.Sc. (Computer Science) I Year, I Semester (CBCS)**
**CS125: Programming in C**
**Academic Organizer 2017-18**

| Unit no/month | Sub Unit | Details | Periods | Total |
|---|---|---|---|---|
| JUNE<br>UNIT I | a) | **Unit-1: Introduction to Computers:** Introduction, Characteristics of computers, Evolution of computers, Computer generations. | 2 | 7 |
| | b) | **Basic Computer Organization**: Block diagram of computer, Input unit, Output unit, Storage unit, ALU, Control unit, CPU. | 2 | |
| | c) | **Number system**: Conversion from Binary to Decimal and Decimal to Binary. | 1 | |
| | d) | Types of Software's (Operating Systems, Utility Programs and Application Programs). | 2 | |
| JULY<br>UNIT-II | e) | **Planning the computer program**: Algorithms, Flow charts. **Computer Languages**: Machine language, Assembly language and High-level language: Compiler, Interpreter, Examples for High-level languages. | 5 | 17 |
| | f) | **Operating systems**: Main functions of an Operating system, Some popular Operating Systems. | 2 | |
| | g) | **C Fundamentals:** Introduction, Integrated Development Environment, Basic structure of C programs, Executing a C program, | 3 | |
| | h) | Character Set, C-Tokens, Keywords & Identifiers, Constants, Variables, Data Types. | 2 | |
| | i) | **Unit- 2:Control, Decision Making Statements and Looping statements** Operators, Arithmetic Expressions, type casting, Operator precedence and Associativity, Formatted Input (scanf), Formatted Output (printf). | 5 | |
| AUGUST<br>UNIT-II<br>&III | j) | The **simple** if statement, if..else statement, Nesting if..else statements, The else if ladder, switch statement, conditional operator (? :). | 3 | 18 |
| | k) | **Looping Statements**: The while statement, do statement, for statement, Nesting of for loops, break statement, continue statement. | 3 | |
| | l) | **Unit -3: Arrays, Strings and Functions**<br>**Arrays:** Introduction, One-Dimensional Arrays: Declaration of Arrays, Initialization of Array Two-Dimensional Arrays: | 3 | |
| | m) | **Handling of Character strings:** Introduction, Declaring and Initializing String variables, String Handling functions. | 3 | |
| | n) | **User-Defined Functions**: Introduction, Need for User-defined Functions, The form of C functions, Category of Functions: | 3 | |
| | o) | No arguments and no return values, Arguments but no return values, Arguments with return values. Recursion. | 3 | |

| | | | | |
|---|---|---|---|---|
| SEP UNIT-IV | p) | **Unit-4:Storage Classes, Structures, Unions, Pointers, Preprocessors** Storage Classes: Storage Classes (Auto, static, register, extern). | 3 | 18 |
| | q) | **Working with Structures**: Structure Definition, Structure Initialization, Arrays of structures, Arrays within Structure | 4 | |
| | r) | Nested Structures (Structures within Structures), Unions, Enumerated Data types, The typedef statement. | 3 | |
| | s) | **Pointers**: Understanding pointers, Accessing the address of a Variable, Declaring and Initializing pointers. | 3 | |
| | t) | Pointers Expressions, Dynamic Memory Allocation (Pointers with Memory allocation). **The preprocessors**: Macro Substitution (The # define statement), File Inclusion (# include - user defined header files). | 5 | |
| | | **TOTAL NO OF PERIODS** | | **60** |
| | | | | |

Bharatiya Vidya Bhavan

# BHAVAN'S VIVEKANANDA COLLEGE

**OF SCIENCE, HUMANITIES AND COMMERCE**

**(Accredited with 'A' grade by NAAC)**

**Autonomous College**

**Affiliated to Osmania University**

**B.Sc. (Computer Science) I Year, II Semester (CBCS)**

**CS225:Programming in C++** -2017-18

**Work Load: 60 Hrs.** **Credits: 4**

| Month | Unit | Topic | Periods per Subunit | Total Periods |
|---|---|---|---|---|
| NOV/ DEC 2016 | I | **Beginning with C++:** Output operator, Input operator. | 1 | 15 |
| | | Structure of C++ program. | 1 | |
| | | **Tokens and Expressions:** Tokens – Keywords, Identifiers, Constants. | 1 | |
| | | Basic data types, Derived data types and User defined data types, Declaration of variables, Dynamic initialization of variables, | 1 | |
| | | Types of Operators, | 2 | |
| | | Manipulators, Type Cast Operator, | 1 | |
| | | Expressions and their types and Operator precedence. | | |
| | | **Control Flow:**Introduction, Statements and Block, Branching statements (if, if...else statement, nested if, switch), | 2 | |
| | | Looping statements (while, do–while and for), break, continue statement. | 2 | |
| | | **Arrays and Strings:** Introduction, Operations on Arrays: | 1 | |
| | | Array definition, Accessing Array elements, | 1 | |
| | | Accessing two-dimensional Array elements, | 1 | |
| | | Strings, String Manipulations. | 1 | |
| | | **Ch-2, Ch-3: Refer Book 1. Ch-3, Ch-5, Ch-6: Refer Book 2.** | | |
| | | | | |

| | | | | |
|---|---|---|---|---|
| DEC / JAN 2017 | II | **Modular programming with Functions:** | | 15 |
| | | Introduction, Function components | 1 | |
| | | Library functions | | |
| | | Parameter passing (Pass by Value, Pass by Address and Pass by Reference) | 2 | |
| | | Recursive functions | 1 | |
| | | **Principles of OOP:** | | |
| | | Basic concepts of OOP | 2 | |
| | | Benefits and applications of OOP | 1 | |
| | | **Classes and Objects**: Introduction, Specifying a class | 1 | |
| | | Creating objects, Accessing class members | 1 | |
| | | Defining member functions, Inline functions, Nesting of member functions | 2 | |
| | | **Constructors and Destructors**: Introduction, Constructors | 1 | |
| | | Parameterized constructors | 1 | |
| | | Constructors with default arguments | 1 | |
| | | Copy constructors. | | |
| | | Destructors | 1 | |
| | | **Ch-7:Refer Book 2.Ch-1, Ch-5, Ch-6: Refer Book 1**<br>**Ch-4(82 -84) (Refer Book-1)Inline Functions** | | |
| JAN / FEB 2017 | III | **Inheritance**: Introduction, Defining derived class | 2 | 15 |
| | | Single inheritance | 1 | |
| | | Multilevel inheritance | 1 | |
| | | Multiple inheritance | 1 | |
| | | Hierarchical inheritance | 1 | |
| | | **Polymorphism**: Function overloading (**4 Ch)** | 2 | |
| | | Defining Operator Overloading | 1 | |
| | | Overloading with Unary Operator | 2 | |
| | | Pointers(declaring and initializing pointers) | 2 | |
| | | virtual functions | 2 | |
| | | **Ch-8, Ch-4, Ch-7, Ch-9 Refer Book 1** | | |
| FEB / MAR CH 2017 | IV | **Templates**: Introduction, Function Templates | 2 | |
| | | | 2 | |
| | | | 2 | 15 |
| | | | 2 | |
| | | | 2 | |
| | | | 2 | |

| | | | | | |
|---|---|---|---|---|---|
| | | Class Templates | | 3 | |
| | | **Exception Handling:** Introduction, Basics of Exception Handling, | | | |
| | | Throwing Mechanism, | | | |
| | | Catching Mechanism | | | |
| | | Multiple Catch Statements. | | | |
| | | Revision | | | |
| | | **Ch-12, Ch-13: Refer Book 1** | | | |

60

## Prescribed books:


1. Object Oriented Programming with *C++* 4th Edition, By E Balaguruswamy, Publisher, Tata McGraw-Hill Education 2008.

2. Mastering C++, By K. R. Venugopal. Tata McGraw-Hill Publishing Company, 1997 - C++.

**Department of Computer Science**
**Academic Organizer for 2017 JUNE-2017 SEPT**
**B.Sc(Computers) III SEM**
**Subject: Data Structures**

| Month | Unit | Topic | Periods per Subunit | Total Periods |
|---|---|---|---|---|
| JUNE | I | **Sorting:** | | 15 |
| | | SequentialLinear Search(straight forward method) | 2 | |
| | | Binary Search algorithm | 3 | |
| | | Bubble sort | 3 | |
| | | Selection Sort, Insertion Sort | 3 | |
| | | Quick Sort | 4 | |
| JULY | II | **Linear Data Structures: Stacks and Queues:** | | 15 |
| | | Stacks-Basic Stack Operations | 3 | |
| | | Stack ADT –Array Implementation | 3 | |
| | | Queues-Queue Operations | 2 | |
| | | Queue ADT-Array Implementation | 3 | |
| | | Deques, Priority Queues. | 4 | |
| AUG | III | **Linear Data Structures: General Linear List** | | 15 |
| | | Basic operations-insertion, deletion, retrieval, | 3 | |
| | | Implementation of General Linear List. | 2 | |
| | | Stack Linked List implementation, | 2 | |
| | | Queue Linked List Design | 2 | |
| | | Doubly Linked List –insertion and deletion algorithms. | 4 | |
| | | ,Queue ADT Linked List Implementation, | 2 | |
| SEPT | IV | **Non-Linear Data Structures** | | 15 |
| | | Binary Tree Concepts, Binary Trees | 2 | |
| | | Binary Tree Traversals, Binary Search Trees | 2 | |
| | | Operations on Binary Search Trees | 3 | |
| | | Binary Search Tree Algorithms | 2 | |
| | | **Graphs**: Terminology,Operations | 1 | |
| | | Adjacency Matrix, Adjacency List | 2 | |
| | | Depth-First Traversal, Breadth-First Traversal. | 3 | |
| TOTAL NO.OF.CLASSES | | | | 60 |

# BHAVAN'S VIVEKNANDA COLLEGE
## Department of Computer Science
## B.Sc - IV Semester, Database Management Systems
## Academic Organizer 2017-2018

| Unit No. | Month | Sub Unit | No of classes | Total Periods |
|---|---|---|---|---|
| Unit-I | NOVEMBER | Database Environment -Basic concepts and definitions, traditional file processing systems, database approach, Range of database applications | 6 | 20 |
| | | Advantages of database approach, Costs and Risks, Components of DatabaseEnvironment . Three schema Architecture for Database Development, Three – tiered Database Location Architecture. | 6 | |
| | | E-R Model –Sample E-R model, E-R Notation. Entities-Strong V/S Weak Entity Types, Attributes-Simple v/s Composite Attribute, Single-Valued v/s Multivalued Attribute ,Stored v/s Derived Attribute, Relationships-Degree of a Relationship. Cardinality constraints-minimum, maximum | 8 | |
| Unit-II | DECEMBER | Enhanced E-R model – Representing Super type, Sub type, Representing Specialization and Generalization, Specifying Completeness Constraints,SpecifyingDisjointnessConstraints, Specifying Subtype discriminators, Defining Super type /Subtype Hierarchies. | 8 | 16 |
| | | Relational model - Definitions, Integrity constraints, Transforming EER diagrams into relations, Normalization –Basic normal forms(First Normal Form ,Second Normal Form,Third Normal Form ), Merging relations, Denormalization. | 8 | |
| Unit-III | JANUARY | Backing Up Databases and Concurrency Control Access: Basic Recovery Facilities- Backup Facilities, Journalizing Facilities, Checkpoint Facility,Recovery Manager. Recovery and Restart Procedures-Switch, Restore/Rerun, Transaction integrity, Backward Recovery and Forward Recovery.Types of Database Failures- Aborted Transactions, Incorrect data, System Failure, Database destruction. | 6 | 11 |
| | | The problem of Lost updates. SerializabilityLocking mechanism-Locking levels, Types of Locks, Deadlock, Managing Deadlock.Data Dictionaries and Repositories. | 5 | |
| | | Client/server and Middle ware - Client/server Architectures, Three-tier architecture - partitioning, Middleware, Establishing Client/Server Security,Client/Server issues.<br>Distributed Databases-Introduction, Data Replication: Snapshot replication, Near Real-time Replication, Pull replication, Database integrity with replication, when to use replication | 5 | |
| Unit-IV | FEBRUARY | Horizontal Partitioning, Vertical Partitioning, Combination of operations. Distributed DBMS: Location Transparency, Replication Transparency, Failure transparency, Commit protocol, Concurrency transparency. | 5 | 13 |
| | | Database Administration - Role of data and database Administrators: Traditional data administration, Traditional database administration, Evolving Approaches to Data and Database Administration, Evolving Approaches to Data Administration | 3 | |
| | | | | |
| **TOTAL** | | | | **60** |

# BHAVAN'S VIVEKNANDA COLLEGE
## Department of Computer Science
## B.Sc - V Semester, DBMS
## Academic Organizer 2017-2018

| Unit No. | Month | Sub Unit | No of classes | Total Periods |
|---|---|---|---|---|
| Unit-I | June | Basic File Terminology, Database Systems | 3 | 12 |
| | | Advantages of DBMS, Types of Databases | 3 | |
| | | Degrees of Data Abstraction | 3 | |
| | | Database System Environment, DBMS Functions, | 3 | |
| Unit-II | July | Tables and their Characteristics, | 2 | 11 |
| | | Integrity Rules, Codd's Relational Rules, | 3 | |
| | | Entities, Attributes, Relationships, Degrees of Relationships, Cardinality Constraints,. | 6 | |
| Unit-III | August | Advanced Data Modeling, EER, Specialization Hierarchy | 3 | 14 |
| | | Generalization, Disjointness Constraint | 4 | |
| | | Characteristics of Primary Key, Subtype Discriminator | 3 | |
| | | DBA Roles- Managerial and Technical Roles | 4 | |
| Unit-IV | September | Normalization-1 NF, 2NF,3NF,BCNF,4NF,5NF | 6 | 8 |
| | | Denormalization | 2 | |
| **TOTAL** | | | | **45** |

# Bhavan's Vivekananda College

**Department of Computer Science**

**Academic Organizer 2017-2018**

**B.Sc 3rd year 5th Semester**

**CS525A: Web Programming (Elective – I) (Paper IV-A)**

| Month | Details | Total Classes alloted | Unit wise Total | Hod Signature |
|---|---|---|---|---|
| June | **Unit-I: Introduction and HTML** HTML, XML and WWW, history of html, hypertext, styles versus formatting, MIME-introduction, Types, Helper-applications. | 3 | 12 | |
| | Introduction to HTML, Structure of HTML,HTML DOM, Document Head Tag, Document Body Tags, | 2 | | |
| | HTML Comments, Paired and Unpaired Tags, Logical and Physical Tags, Formatting Tags, | 2 | | |
| | Document Body Tags, HTML Comments, Paired and Unpaired Tags, Logical and Physical Tags, Formatting Tags, | 2 | | |
| | Character Entities, Lists, Images – Adding Images, Text, Image Maps, | 3 | | |
| July | Hyperlinks- External Hyperlinks, Text, Image, Mail-to, Intra-Hyperlinks. | 2 | 12 | |
| | **Unit-II: More HTML**<br>Creating Tables-Setting Table Border Width, Cell Padding, Cell Spacing, Colors | 3 | | |
| | Aligning Cell Text, Nesting Tables, Spanning Multiple Rows and Cols, Grouping and Formatting Columns, Rows(Rowspan, Colspan). | 3 | | |
| | Creating HTML Forms – Creating Textbox, Text Area, Password, Radio Buttons, Checkboxes, Select Control, Grouping and Labeling Form Elements. | 2 | | |
| | Creating Frames- Creating Vertical, Horizontal Frames, Named Frames as Hyperlink Targets,<br>Borderless Frames, Frame Color, No Frames, iFrames. | 2 | | |
| Aug | **Unit-III: Introduction to the Style Sheets**<br>DHTML- Introduction to DHTML, Differences between HTML and DHTML, Properties of DHTML. | 2 | 10 | |
| | Creating Style Sheets: Types of CSS-Inline, External, Embedded, Imported, Positioning Elements using Styles-Absolute, Relative. | 4 | | |
| | Properties of CSS- Text, Font, List and Background, Universal Style References - Class, ID Selector, Div, Span | 4 | | |
| Sept | **Unit-IV: Introduction to the DHTML**<br>Events in DHTML- Creating MouseOver, MouseOut Effects-Color, Font Size, Background, Hover, Images, Cursor. | 4 | 11 | |
| | Dynamic Content - InnerText, OuterText, InnerHtml, Outerhtml.<br>Multimedia - MIME, Sound Formats, Video Formats, Adding Audio and Video Files to Webpage. | 4 | | |
| | Visual effects – Filters –Filters Properties, Transitions – Transitions Properties, Page / Site<br>Transition with Meta, Object Transition with Div. | 3 | | |
| **Total Classes** | | **45** | 45 | |

# BHAVAN'S VIVEKNANDA COLLEGE
## Department of Computer Science
## B.Sc - VI Semester ADBMS
## Academic Organizer 2017-2018

| Unit No. | Month | Sub Unit | No of classes | Total Periods |
|---|---|---|---|---|
| Unit-I | November | SDLC- Planning, Analysis, Detailed System Design Implementation, Maintenance | 3 | 8 |
| | | DDLC- Database Initial Study, Database Design, Implementation and Loading, Testing and Evaluation. Operation and Evolution | 3 | |
| | | Database Design, Centralized Design vs Decentralized Design | 2 | |
| Unit-II | December | Transaction- Transaction Properties, Transaction Management with SQL, Transaction Log | 3 | 15 |
| | | Concurrency Control- Lost Updates, Uncommitted Data, Inconsistent Retrievals | 3 | |
| | | Scheduler, Concurrency Control with locking methods, Lock Granularity, Lock Types | 2 | |
| | | Two Phase Locking to ensure Serializability, Deadlocks, Concurrency Control with Time Stamping Methods, Wait/Die and Wound Wait Schemes, | 4 | |
| | | Concurrency Control with Optimistic Methods, Database Recovery Management, Transaction Recovery. | 3 | |
| Unit-III | January | Distributed Database Management Systems: The evolution of Distributed Database Management Systems, DDBMS Advantages and Disadvantages, Distribution Processing and Distribution Databases, | 3 | 11 |
| | | Levels of Data and Process Distribution, Distributed Database Transparency Features, Distribution Transparency, Transaction Transparency - Distributed Requests and Distributed Transactions, | 4 | |
| | | Distributed Concurrency Control, Two-Phase Commit Protocol, Distributed Database Design - Data Fragmentation, Data Replication. C.J. DATE'S Twelve Commandments for Distributed Databases. | 4 | |
| Unit-IV | February | The Data Warehouse: The need for data analysis, Decision Support Systems(Data), - Operational Data vs. Decision Support Data, Decision Support Database Requirements | 2 | 11 |
| | | The Data Warehouse – Twelve Rules that Define a Data Warehouse, Online Analytical Processing- Multi-Dimensional Data Analysis Techniques, Advanced Database Support, | 4 | |
| | | Easy-to-use End-user Interface, Client-Server Architecture, OLAP Architecture. Relational Vs. Multidimensional OLAP, Star Schemas – Facts, Dimensions, Attributes, Attribute Hierarchies, Star Schema Representation, Data Mining | 5 | |
| **TOTAL** | | | | **45** |

# Bhavan's Vivekananda College

**Department of Computer Science**

**Academic Organizer 2017-2018**

**B.Sc 3rd year 6th Semester**

**CS625A: Web Programming with Client Side Scripting (Elective – I) (Paper IV-A)**

| Month | Details | Total Classes alloted | Unit wise Total |
|---|---|---|---|
| Nov 11Hrs | Unit-I: Java Script Basics<br>An introduction to Java Script: JavaScript - The Basics, Variables, | 3 | 11 |
| | Dialog Boxes (Prompt, Alert Messages and Confirmations), I/O Statements, | 4 | |
| | Operators, Statements-Sequential, Conditional, Looping. | 4 | |
| Dec 11Hrs | **Unit-II: Functions &Arrays in JavaScript**<br>Functions – Defining Functions ,Parameter Passing, Examining Function Call, | 4 | 11 |
| | String Objects, Creating Arrays ,Adding Elements to Array, Accessing Array Members, Searching Array Element, Removing Array Element, | 4 | |
| | Object-based Array Functions | 3 | |
| Jan 11 Hrs | **Unit-III: Object in JavaScript**<br>Data and Objects in JavaScript, Objects-A Brief introduction, JavaScript Objects-new, this,.(dot) | 3 | 11 |
| | Exception Handling, Built-in Objects (Document, Window, Form, Navigator/Browser, Date), | 4 | |
| | JavaScript Events. Dynamic HTML with JavaScript: Data Validation. | 4 | |
| Feb 12 Hrs | **Unit-IV: XML and Protocols**<br>XML: Defining Data for Web Applications: Basic XML, Document Type Definition, XML Namespaces, XML Schema, XML Document Object Model, | 4 | 12 |
| | Presenting XML-(XSL elements, Styling xml with CSS).<br>Protocols: Introduction to Protocols, IP and TCP, IP Address, HyperText Transfer Protocol, | 4 | |
| | what is Common Gateway Interface, the Document Object Model.<br>Useful Software: Web Browsers- Introduction, Types of Browser, Factors for Choosing a Browser. | 4 | |
| **Total Classes** | | **45** | 45 |