SR BGNR GOVT ARTS & SCIENCE DEGREE COLLEGE (A), KHAMMAM

DEPARTMENT OF COMPUTERS

2020 – 2021 SYLLABUS

SR BGNR GOVT ARTS & SCIENCE DEGREE COLLEGE (A), KHAMMAM

SR & BGNR GOVT ARTS&SCIENCE DEGREE COLLEGE(A), KHAMMAM
B.Sc I YEAR SEMESTER – II
Ability Enhance Compulsory Course(AECC)
Basic Computer Skills
FUNDAMENTALS OF COMPUTERS

Theory: 2 Hours/Week;   Credits: 2   Marks: 50 (Internal: 10; External: 40)

Unit I:

Introduction to Computers: What is computer, characteristics of computers, Generations of Computers, Classification of computers, Basic computer organization, Applications of computers. Input and Output devices: Input Devices, Output Devices, Softcopy Devices, Hard copy devices. Computer Memory and Processors: Introduction, Memory Hierarchy, Processor, Registers, Cache memory, primary memory, secondary storage devices, magnetic tapes, floppy disks, hard disks, optical drives, USB flash drivers, Memory cards, Mass storage devices, Basic processors architecture.

Unit II:

Number system and computer codes: Binary number system, working with binary numbers, octal number system, hexadecimal number system, working with fractions, signed number representation in binary form, BCD code, and other codes. Boolean algebra and logic gates: Boolean Algebra, Venn diagrams, representation of Boolean functions, logic gates, logic diagram s and Boolean expressions using karnaugh map. Computer Software: Introduction to computer software, classification of computer software, system software, application software, firmware, middleware, acquiring computer software, design and implementation of correct, efficient and maintainable programs.

Text: Reema Thareja, Fundamentals of Computers

References

1. V. Rajaraman, 6th Edition Fundamentals of Computers, Neeharika Adabala
2. Anitha Goel, Computer Fundamentals.

SR & BGNR GOVT ARTS&SCIENCE DEGREE COLLEGE(A), KHAMMAM
B.Sc. Programme under CBCS
With effect from the A.Y: 2019
Skill Enhancement Course- III
II Year
(Common to all Science Courses)
SEMESTER – IV

Fundamentals of Python

Theory: 2 Hours/Week; Credits: 2 Marks: 50 (Internal: 10; External: 40)

Unit – I

Introduction to Python Programming: How a Program Works, Using Python, Program Development Cycle, Input, Processing, and Output, Displaying Output with the Print Function, Comments, Variables, Reading Input from the Keyboard, Performing Calculations (Operators. Type conversions, Expressions), More about Data Output. Decision Structures and Boolean Logic: if, if-else, if-elif-else Statements, Nested Decision Structures, Comparing Strings, Logical Operators, Boolean Variables. Repetition Structures: Introduction, while loop, for loop, Calculating a Running Total, Input Validation Loops, Nested Loops.Lists and Tuples: Sequences, Introduction to Lists, List slicing, Finding Items in Lists with the in Operator, List Methods and Useful Built-in Functions, Copying Lists, Processing Lists,

Unit – II

Tuples- operations on tuples, Strings: Basic String Operations, String Slicing, Testing, Searching, and Manipulating Strings. Dictionaries and Sets: Dictionaries, Sets- operations on sets and Dictionaries. Functions: Introduction, Defining and Calling a Void Function, Designing a Program to Use Functions, Local Variables, Passing Arguments to Functions, Global Variables and Global Constants, ValueReturning Functions- Generating Random Numbers, Writing Our Own Value-Returning Functions, The math Module, Storing Functions in Modules. File and Exceptions: Introduction to File Input and Output, Using Loops to Process Files, Processing Records, Exceptions.

Text Book:
Tony Gaddis, Starting Out With Python (3e)

References:
1. Kenneth A. Lambert, Fundamentals of Python
2. Clinton W. Brownley, Foundations for Analytics with Python
3. James Payne, Beginning Python using Python 2.6 and Python 3
4. Charles Dierach, Introduction to Computer Science using Python
5. Paul Gries, Practical Programming: An Introduction to Computer Science using Python 3

SR&BGNR GOVT ARTS&SCIENCE DEGREE COLLEGE(AUTONOMOUS),KHAMMAM
Under Graduate Courses (Under CBCS AY: 2020-2023)
B.Sc. DATA SCIENCE
I Year: Semester-1

Paper – I: Fundamentals of Information Technology
[4 HPW:: 4 Credits :: 100 Marks (External:80, Internal:20)]

Objectives:
1. To deal with the basic concepts of computers.
2. To discuss about the computer hardware, its components and basic computer architecture.
3. To understand the basic computer software including the operating system and its concepts.
4. To introduce the software development process
5. To introduce the basic concept of programming

Outcomes:
Students should be able to
1. Identify the components of a computer and their functions.
2. Understand the concept of networking, LAN, Internet, and working of www.
3. Understand the notion of problem solving using computer by programming
4. Understand the notion of Software Project and the Process of software development

Unit-I

Data and Information: Introduction, Types of Data, Simple Model of a Computer, Data Processing Using a Computer, Desktop of Computers, Classification of Computers, Anatomy of a Computer, Structure of a Central Processing Unit, Specifications of a CPU, Interconnection of CPU with Memory and I/O Units, **Input Output Devices:** Introduction, Keyboard, Video Display Devices, Touch Screen Display, E-Ink Display, Printers, Audio Output, Memory Hierarchy, Embedded Processors **Acquisition of Numbers and Textual Data:** Introduction, Input Units, Internal Representation of Numeric Data, Representation of Characters in Computers, Error-Detecting Codes

Unit-II
Computer Networks: Introduction, Local Area Network (LAN), Applications of LAN, Wide Area Network (WAN), Internet, Naming Computers Connected to Internet, Future of Internet Technology **Computer Software:** Introduction, Operating System, Programming Languages, Classification of Programming Languages, Classification of Programming Languages Based on Applications **The Software Problem:** Cost, Schedule, and Quality, Scale and Change **Software Processes:** Process and Project, Component Software Processes, Software Development Process Models **Programming Principles and Guidelines:** Structured Programming, Information Hiding, Some Programming Practices, and Coding Standards

Unit – III

Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept.
Basics of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers,

Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation-precedence and associativity, Type Conversions. Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences, Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements–while, for, do-while; Special Control Statement–goto, break, continue, return, exit.

Unit – IV

Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h, Multidimensional Arrays. Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Score of Variables, Storage Classes, and Recursion. Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Pointers to Pointers, Structures and Unions.

References
1. V Raja Raman. Introduction to Information Technology, 3rd Edition, PHI Learning Private Limited, 2018
2. Pankaj Jalote. Concise Introduction to Software Engineering, Springer, 2011
3. B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C
4. Fundamentals of Computers, by Rema Tharaja, Oxford University Press India

SR&BGNR GOVT ARTS & SCIENCE DEGREE COLLEGE(A), KHAMMAM

Under Graduate Courses (Under CBCS AY: 2020-2021 on words)
B.Sc. DATA SCIENCE
I Year: Semester-II

Paper – II: Problem Solving and Python Programming

[4 HPW:: 4 Credits :: 100 Marks (External:80, Internal:20)]

Objectives
The main objective is to teach Computational thinking using Python.
- To know the basics of Programming
- To convert an algorithm into a Python program
- To construct Python programs with control structures.
- To structure a Python Program as a set of functions
- To use Python data structures-lists, tuples, dictionaries.
- To do input/output with files in Python.
- To construct Python programs as a set of objects.

Outcomes:
On completion of the course, students will be able to:
1. Develop algorithmic solutions to simple computational problems.
2. Develop and execute simple Python programs.
3. Develop simple Python programs for solving problems.
4. Structure a Python program into functions.
5. Represent compound data using Python lists, tuples, and dictionaries.
6. Read and write data from/to files in Python Programs

Unit-I

Introduction to Computing and Problem Solving: Fundamentals of Computing – Computing Devices – Identification of Computational Problems – Pseudo Code and Flowcharts – Instructions – Algorithms – Building Blocks of Algorithms.

Introduction to Python Programming: Python Interpreter and Interactive Mode– Variables and Identifiers – Arithmetic Operators – Values and Types – Statements, Reading Input, Print Output, Type Conversions, The type() Function and Is Operator, Dynamic and Strongly Typed Language.

Control Flow Statements: The if, The if…else, The if…elif…else Decision Control Statements, Nested if Statement, The while Loop, The for Loop, The continue and break Statements.

Unit-II

Functions: Built-In Functions, Commonly Used Modules, Function Definition and Calling the Function, The return Statement and void Function, Scope and Lifetime of Variables, Default Parameters, Keyword Arguments, *args and **kwargs, Command Line Arguments.

Strings: Creating and Storing Strings, Basic String Operations, Accessing Characters in String by Index Number, String Slicing and Joining, String Methods, Formatting Strings.

Unit-III

Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list Parameters; **Tuples**: tuple assignment, tuple as return value; Dictionaries: operations and methods, advanced list processing - list comprehension; Illustrative programs: selection sort, insertion sort, mergesort, histogram **Files and exception**: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages; Illustrative programs: word count, copy file.

Unit-IV

Object-Oriented Programming: Classes and Objects, Creating Classes in Python, Creating Objects in Python, The Constructor Method, Classes with Multiple Objects, Class Attributes versus Data Attributes, Encapsulation, Inheritance The Polymorphism.
Functional Programming: Lambda, Iterators, Generators, List Comprehensions.

References:
1. Introduction to Python Programming, Gowrishankar S, Veena A, CRC Press, Taylor & Francis Group, 2019
2. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016 (http://greenteapress.com/wp/think- python/)

Suggested Reading:
1. Learning To Program With Python, Richard L. Halterman, Copyright © 2011
2. Python for Everybody, Exploring Data Using Python 3, Dr. Charles R. Severance, 2016

SR&BGNR Govt.Arts & Science College(A), Khammam
B.Sc. (Computer Science)
CBCS Pattern with Effect from the Academic Year 2019-2020

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B.Sc. (Computer Science)
SEMESTER – I

Programming in C

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

Unit – I

Computer Fundamentals: Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU.

Program Fundamentals: Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development. Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept.

Basics of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation-precedence and associativity, Type Conversions.

Unit – II

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences,

Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements–while, for, do-while; Special Control Statement-goto, break, continue, return, exit.

Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h, Multidimensional Arrays.
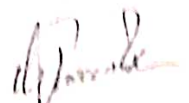
Unit – III

Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Score of Variables, Storage Classes, Inline Functions, and Recursion.

Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Pointers to Pointers, Array of Pointers, Pointer to Array, Dynamic Memory Allocation.

Unit – IV

User-defined Data Types: Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Array of Structures (Union), Structures verses Unions, Enumeration Types.

Textbook: Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)

References:

1. Ivor Horton, Beginning C
2. Ashok Kamthane, Programming in C
3. Herbert Schildt, The Complete Reference C
4. Paul Deitel, Harvey Deitel, C How to Program
5. Byron S. Gonfried, Theory and Problems of Programming with C
6. Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language
7. B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C

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Department of Computer Science   With Effect from the Academic Year 2019-2020

SR&BGNR Govt.Arts & Science College(A), Khammam
B.Sc. (Computer Science)
CBCS Pattern with Effect from the Academic Year 2019-2020

B.Sc. (Computer Science)
SEMESTER – II

Programming in C++

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

Unit – I

Introduction to C++: Applications, Example Programs, Tokens, Data Types, Operators, Expressions, Control Structures, Arrays, Strings, Pointers, Searching and Sorting Arrays.

Functions: Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables as Parameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.

Object Oriented Programming: Procedural and Object-Oriented Programming, Terminology, Benefits, OOP Languages, and OOP Applications.

Unit – II

Classes: Introduction, Defining an Instance of a Class, Why Have Private Members? Separating Class Specification from Implementation, Inline Member Functions, Constructors, Passing Arguments to Constructors, Destructors, Overloading Constructors, Private Member Functions, Arrays of Objects, Instance and Static Members, Friends of Classes, Member-wise Assignment, Copy Constructors, Operator Overloading, Object Conversion, Aggregation.

Unit – III

Inheritance: Introduction, Protected Members and Class Access, Base Class Access Specification, Constructors and Destructors in Base and Derived Classes, Class Hierarchies, Polymorphism-Function Overloading, Function Overriding and Virtual Member Functions, Abstract Base Classes and Pure Virtual Functions, Multiple Inheritance.

C++ Streams: Stream Classes, Unformatted I/O Operations, Formatted I/O Operations.

Unit – IV

Exceptions: Introduction, Throwing an Exception, Handling an Exception, Object-Oriented Exception Handling with Classes, Multiple Exceptions, Extracting Data from the Exception Class, Re-throwing an Exception.

Textbook: Tony Gaddis, Starting out with C++: from control structures through objects (7e)

References:
1. B. Lippman, C++ Primer
2. Bruce Eckel, Thinking in C++
3. K.R. Venugopal, Mastering C++

4. Herbert Schildt, C++: The Complete Reference
5. Bjarne Stroustrup, The C++ Programming Language
6. Sourav Sahay, Object Oriented Programming with C++TEXT BOOK:
7. Object Oriented Programming with C++ Sixth edition, E.Balaguruswamy.

8. A Structured Approach Using C++ By B.A.Forouzan & Rf Gilberg (Thomson Business Information India)

9. Herbert Schilbt, C++ - The Complete Reference, TMH 2002

10. J.P. Cohoon and J.W. Davidson, C++ program design – An Introduction To Programming and Object Oriented Design.- MGH 1999.

Department of Computer Science   With Effect from the Academic Year 2019-2020

SR&BGNR GOVT ARTS&SCIENCE DEGREE COLLEGE(AUTONOMOUS),KHAMMAM

Under Graduate Courses (Under CBCS 2020–2021onwords)

B.Sc. Computer Science II Year
SEMESTER – III

DATA STRUCTURES USING C++

Theory:	4 Hours/Week;	Credits: 4	Marks: 100 (Internal: 20; External: 80)
Practical:	3 Hours/Week	Credits: 1	Marks: 25

Unit - I

Basic data Structure: Introduction to Data Structures, Types of Data Structures, and Introduction to Algorithms, Pseudo code, and Relationship among data, data structures, and algorithms, Implementation of data structures, Analysis of Algorithms.

Stacks: Concept of Stacks and Queues, Stacks, Stack Abstract Data Type, Representation of Stacks Using Sequential Organization (Arrays), Multiple Stacks, Applications of Stack, Expression Evaluation and Conversion, Polish notation and expression conversion, Processing of Function Calls, Reversing a String with a Stack, Recursion.

Unit - II

Recursion: Introduction, Recurrence, Use of Stack in Recursion, Variants of Recursion, Recursive Functions, Iteration versus Recursion.

Queues: Concept of Queues, Queue as Abstract Data Type, Realization of Queues Using Arrays, Circular Queue, Multi-queues, Dequeue, Priority Queue, Applications of Queues,

Linked Lists: Introduction, Linked List, Linked List Abstract Data Type, Linked List Variants, Doubly Linked List, Circular Linked List, Representation of Sparse Matrix Using Linked List, Linked Stack, Linked Queue.

Unit - III

Trees: Introduction, Types of Trees, Binary Tree, Binary Tree Abstract Data Type, Realization of a Binary Tree, Insertion of a Node in Binary Tree, Binary Tree Traversal, Other Tree Operations, Binary Search Tree, Threaded Binary Tree, Applications of Binary Trees.

Searching and Sorting: Search Techniques-Linear Search, Binary Search, Sorting Techniques- Selection Sort, Bubble Sort, Insertion Sort, Merge Sort, Quick Sort, Comparison of All Sorting Methods, Search Trees: Symbol Table, Optimal Binary Search Tree, AVL Tree (Height-balanced Tree).

Unit - IV

Graphs: Introduction, Representation of Graphs, Graph Traversal – Depth First Search, Breadth First Search, Spanning Tree, Prim's Algorithm, Kruskal's Algorithm.

Hashing: Introduction, Key Terms and Issues, Hash Functions, Collision Resolution Strategies, Hash Table Overflow, Extendible Hashing

Heaps: Basic Concepts, Implementation of Heap, Heap as Abstract Data Type, Heap Sort, Heap Applications.

Text books:

1. Varsha H. Patil "Data structures using C++" Oxford University press, 2012
2. M.T. Goodrich, R. Tamassia and D. Mount, Data Structures and Algorithms in C++, John Wiley and Sons, Inc., 2011.

References:

1. Adam Drozdek "Data structures and algorithm in C++" Second edition, 2001
2. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, Introduction to Algorithms,2nd Ed., Prentice-Hall of India, 2006.
3. Robert L. Kruse and A.J. Ryba, Data Structures and Program Design in C++, PrenticeHall, Inc., NJ, 1998.
4. B. Stroupstrup, The C++ Programming Language, Addison Wesley, 2004
5. D.E. Knuth, Fundamental Algorithms (Vol. I), Addison Wesley, 1997

SR&BGNR GOVT ARTS & SCIENCE DEGREE COLLEGE(A), KHAMMAM
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.Sc. Computer Science II Year
SEMESTER – IV

DATA BASE MANAGEMENT SYSTEMS

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)

Practical: 3 Hours/Week Credits: 1 Marks: 25

Unit - I

Introduction: Database-System Applications, Purpose of Database Systems, View of Data, Database Languages, Relational Databases, Database Design, Data Storage and Querying, Transaction Management, Database Architecture, Database Users and Administrators.

Introduction to the Relational Model: Structure of Relational Databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages, Relational Operations.

Unit - II

Database Design and the E-R Model: Overview of the Design Process, The Entity- Relationship Model, Constraints, Removing Redundant Attributes in Entity Sets, Entity-Relationship Diagrams, Reduction to Relational Schemas, Entity-Relationship Design Issues, Extended E-R Features, Alternative Notations for Modeling Data, Other Aspects of Database Design.

Relational Database Design: Features of Good Relational Designs, Atomic Domains and First Normal Form, Decomposition Using Functional Dependencies, Functional- Dependency Theory, Decomposition Using Multivalued Dependencies, Normal Forms-2 NF, 3 NF, BCNF, The Database Design Methodology for Relational Databases.

Unit - III

Introduction to SQL: Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Subqueries, Modification of the Database.

Intermediate SQL: Join Expressions, Views, Transactions, Integrity Constraints, SQL Data Types and Schemas, Authorization.

Advanced SQL: Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

Unit - IV

Transaction Management: Transaction Support-Properties of Transactions, Database Architecture, Concurrency Control–The Need for Concurrency Control, Serializability and Recoverability, Locking Methods, Deadlock, Security: Database Security–Threats, Computer-Based Controls–Authorization, Access Controls, Views, Backup and Recovery, Integrity, Encryption, RAID.

Text book:

1. Silberschatz, H. Korth and S. Sudarshan, Database System Concepts, 6th Ed., Tata McGraw Hill, 2011
2. Thomas M. Connolly, Carolyn E. Begg, Database Systems-A Practical Approach to Design, Implementation, and Management (6e)

SR & BGNR GOVT ARTS &SCIENCE DEGREE COLLEGE (A),KHAMMAM
BSC Computer Science III year
From the Academic year 2018-2019
V Semester Syllabus (CBCS)

Paper- : Programming in Java (Core)

Unit I
Introduction: Java Essentials, JVM, Java Features, Creation and Execution of Programs, Data Types, Type Conversion, Casting, Conditional Statements, Loops, Branching Mechanism, Classes, Objects, Class Declaration, Creating Objects, Method Declaration and Invocation, Method Overloading,

Unit II
Constructors – Parameterized Constructors, Constructor Overloading, Cleaning-up unused Objects. Class Variables &Method-static Keyword, this Keyword, One-Dimensional Arrays, Two-Dimensional Arrays, Command-Line Arguments, Inner Class.

Inheritance: Introduction, Types of Inheritance, extends Keyword, Examples, Method Overriding, super, final Keyword, Abstract classes, Interfaces, Abstract Classes Verses Interfaces.

Packages: Creating and Using Packages, Access Protection, Wrapper Classes, String Class, String Buffer Class.

Unit III
Exception: Introduction, Types, Exception Handling Techniques, User-Defined Exception.

Multithreading: Introduction, Main Thread and Creation of New Threads –By Inheriting the Thread Class or Implementing the Runnable Interface, Thread Lifecycle, Thread Priority and Synchronization.

Input/Output: Introduction, java.io Package, File Class, FileInputStream Class, FileOutputStream Class, Scanner Class, BufferedInputStream Class, BufferedOutputStream Class, RandomAccessFile Class.

Unit IV
Applets: Introduction, Example, Life Cycle, Applet Class, Common Methods Used in Displaying the Output.

Event Handling: Introduction, Types of Events, Example.

AWT: Introduction, Components, Containers, Button, Label, Checkbox, Radio Buttons, Container Class, Layouts. Swing: Introduction, Differences between Swing and AWT, Jframe, Japplet. Jpanel, Components in Swings, Layout Managers, Jtable, Dialog Box.

Database Handling Using JDBC: Introduction, Types of JDBC Drivers, Load the Driver, Establish Connection, Create Statement, Execute Query, Iterate Resultset, Scrollable Resultset, Developing a JDBC Application.

SR & BGNR GOVT ARTS &SCIENCE DEGREE COLLEGE (A),KHAMMAM

BSC Computer Science III year

From the Academic year 2018-2019

V Semester Syllabus (CBCS)

Elective 1

B. Visual Programming (Elective)

Unit I

Introduction to VB: Writing windows application with VB, Programming languages -procedural, object oriented, event driven; VB Environment, Writing first VB project, compiling, debugging, and running the programs.

Controls : Introduction to controls textboxes, frames, check boxes, option buttons, images, setting borders and styles, the shape control, the line control, working with multiple controls and their properties, designing the user interface, keyboard access, tab controls, default & cancel property, coding for controls.

Variables, constants, and Calculation: Data types, naming rules and conversion, constants-named and intrinsic, declaring variables, scope of variables, val function, arithmetic operations, formatting data Counting and accumulating Sums.

Unit II

Decisions and Conditions : If statement, Conditions comparing numeric variables and constants, comparing strings, compound conditions (and, or, not), nested if statements, using if statements with option buttons & check boxes, displaying message in message box, input validation. Calling event procedures, debugging VB projects, Debugging Step-by-Step Tutorial.

Modular programming: Menus, using common dialog box, writing general procedure.

Unit III

Forms Handling: Multiple forms, creating, adding, removing forms, hide, show method, load, unload statement, me keyword, referring to objects on a different forms, Variables and constants in Multiple-Forms.

Iteration Handling: Lists Boxes and Combo Boxes, Do/loops, for/next loops, using msgbox function, using string function

Arrays: control Arrays, the case structure, single-dimension arrays, for Each/Next statement, table lookup, using list boxes with array, multi dimensional arrays.

Unit IV

Database Connectivity: VB and database, using the data control, viewing a database file-step-by-step, Navigating the Database in code, using list boxes and comboboxes as data-bound controls, adding a lookup table and navigation-step-by-step, updating a database file, Record sets, working with database fields, creating a new Dynaset.

Advanced topics in VB: ActiveX controls, Dynamic link libraries (DLL), Multiple Document interface (MDI).

Text Book:

1. Programming in Visual Basic 6.0 by Julia Case Bradley, Anita C. Millispangh (Tata Mcgraw Hill Edition 2000 (Fourteenth Reprint 2004)

B.Sc (Computer Science)

SR&BGNR GOVT ARTS&SCIENCE DEGREE COLLEGE(A), KHAMMAM
U.G COMPUTER SCIENCE (CBCS)
B.Sc Final Year (DSC) Semester(VI)

Elements of Scripting Languages (Core)

Unit – I

HTML. Browsers and their types, URL's web sites. Domain Names, static and dynamic sites and active web pages, Files Creation, Web Server, Web Client Browser Hyper Text Markup Language, HTML Tags, Paired Tags, Commonly used HTML Commands Titles and Footers, Paragraph Breaks, Line Breaks, Heading Styles, Drawing Lines, Text Styles, Other Text Effects Indenting Text, Lists, Types of Lists.

Unit – II

Using the Border attribute, Using the Width and Height Attribute, Using the Align Attribute, Tables – Header, Data rows, The Caption Tag, Attributes – Width and Border, BGCOLOR, COLSPAN,ROWSPAN. External Document References, Internal Document References, Images in Hyperlinks, Introduction to Frames, tag, <FRAME> tag.

DHTML Introduction, use and its elements, Cascading Style Sheets – Introduction, Using Inline Styles, Sample Examples, Defining Your Own Styles, Properties in Values in Styles. A worked example, Formatting Blocks of Information Layers, Embedded Style Sheets, Linking external Sheets.

Unit III

JavaScript, Advantages, JavaScript Syntax, Data Types and Literal, Type Casting, Variables, Incorporating variables in a Script, Array, Operators and Expressions, Arithmetic Operators, Logical Operators, Comparison Operators, String Operators, Assignment Operators, Conditional Expression, Ternary and Special Operators.

Unit IV

JavaScript Programming Constructs, If – then – else, Immediate If, For Loop, Built – in – Functions. User Defined functions, Declaring functions, Place of Declaration, Passing Parameters, Variable scope, Return Values, Recursive Functions, Placing text in a Browser, Dialog boxes- Alert dialog box, Prompt dialog box, Confirm dialog box.

Text Books: 1. Web Programming – Chris Bates – 3rd Edition (Wiley)

2. Internet & World Wide Web – H.M. Deitel, P.J. Deitel,
   A.B. Goldberg- 3rd Edition

SR&BGNR GOVT ARTS&SCIENCE DEGREE COLLEGE(A), KHAMMAM
U.G COMPUTER SCIENCE (CBCS)
B.Sc Final Year (DSC) Semester(VI) Elective

Operating Systems *(elective)*

Unit-I

Introduction: Computer – System Architecture, Computing Environments, Operating – System Structures: Operating – System Services, User Interface for Operating – System, System Calls, Types of System Calls, Operating System Structure.

  Process Management : Process Concept, Process Scheduling, Operations on Processes, Inter process Communication, Example-Producer – Consumer Problem.

Unit-II

CPU Scheduling : Concepts, Scheduling Criteria, Scheduling Algorithms.
Process Synchronization: Critical –Section Problem, Peterson's Solution, Synchronization, Semaphores, Monitors.

Unit-III

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

Unit-IV

Main Memory: Introduction, Swapping, Contiguous Memory Allocation, Segmentation, Paging.
 Virtual Memory: Introduction, Demand Paging, Page Replacement, Allocation of Frames, Thrashing.

Text book: Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Concepts.

Ref: 1. Naresh Chauhan, Principles of Operating Systems
     2. Thomas W.Doeppner, Operating Systems in Depth
     3. Andrew S. Tanenbaum, Modern Operating Systems
     4. William Stallings, Operating Systems – Internals and Design
        Principles
     5. Dhanunjay M.Dhandhere, Operating Systems- A Concept Based Approach

SR&BGNR GOVT ARTS&SCIENCE DEGREE COLLEGE (AUTONOMOUS), KHAMMAM
B.A. / B.Sc. Life Science I Year Computer Applications
SEMESTER – I
Programming in C

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

Unit – I

Computer Fundamentals: Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU.
Program Fundamentals: Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development.
Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept.
Basics of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation–precedence and associativity, Type Conversions.

Unit – II

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences,
Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements–while, for, do-while; Special Control Statement–goto, break, continue, return, exit.
Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h,

Unit – III

Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Score of Variables, Storage Classes, Inline Functions, and Recursion.
Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Dynamic Memory Allocation.
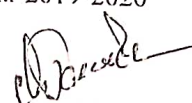
Unit – IV

User-defined Data Types: Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Structures verses Unions, Enumeration Types.
Files: Introduction, Using Files in C, Working with Text Files and Binary Files, Other File Management Functions.

Textbook: Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)
References:
1. Ivor Horton, Beginning C
2. Ashok Kamthane, Programming in C
3. Herbert Schildt, The Complete Reference C
4. Paul Deitel, Harvey Deitel, C How to Program
5. Byron S. Gottfried, Theory and Problems of Programming with C
6. Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language
7. B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C

With Effect from the Academic Year 2019-2020

SR&BGNR Govt.Arts & Science College(A), Khammam
FACULTY OF SCIENCE
B.A./B.Sc. Life Science (Computer Applications)
SEMESTER – II

Programming in C++

	4 Hours/Week 4 Credit	Internal marks = 20
Theory	3 Hours/Week 1 Credit	External Marks = 80
Practical		

Unit – I

Introduction to C++: Applications, Example Programs, Tokens, Data Types, Operators, Expressions, Control Structures, Arrays, Strings, Pointers, Searching and Sorting Arrays.

Functions: Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables as Parameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.

Unit – II

Object Oriented Programming: Procedural and Object-Oriented Programming, Terminology, Benefits, OOP Languages, and OOP Applications.

Classes: Introduction, Defining an Instance of a Class, Why Have Private Members? Separating Class Specification from Implementation, Inline Member Functions, Constructors, Passing Arguments to Constructors, Destructors, Overloading Constructors, Private Member Functions, Arrays of Objects, Instance and Static Members, Friends of Classes, Member-wise Assignment, Copy Constructors, Operator Overloading.

Unit – III

Inheritance: Introduction, Protected Members and Class Access, Base Class Access Specification, Constructors and Destructors in Base and Derived Classes, Redefining Base Class Functions, Polymorphism and Virtual Member Functions, Abstract Base Classes and Pure Virtual Functions, Multiple Inheritance.

C++ Streams: Stream Classes, Unformatted I/O Operations, Formatted I/O Operations.

Unit – IV

Exceptions: Introduction, Throwing an Exception, Handling an Exception, Object-Oriented Exception Handling with Classes, Multiple Exceptions, Extracting Data from the Exception Class, Re-throwing an Exception.

Textbook: Tony Gaddis, Starting out with C++: from control structures through objects (7e)

References:
1. B. Lippman, C++ Primer
2. Bruce Eckel, Thinking in C++
3. K.R. Venugopal, Mastering C++
4. Herbert Schildt, C++: The Complete Reference
5. Bjarne Stroustrup, The C++ Programming Language
6. Sourav Sahay, Object Oriented Programming with C++TEXT BOOK:

SR&BGNR GOVT ARTS&SCIENCE DEGREE COLLEGE (AUTONOMOUS), KHAMMAM
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A. / B.Sc. Life Science II Year Computer Applications
SEMESTER – III

RELATIONAL DATA BASE MANAGEMENT SYSTEMS

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)
Practical: 3 Hours/Week Credits: 1 Marks: 25

Unit-I

Basic Concepts: Database Management System, File based system, Advantages of DBMS over file based system, Database Approach, Logical DBMS Architecture, Three level architecture of DBMS or logical DBMS architecture, Need for three level architecture, Physical DBMS Architecture, Database Administrator (DBA) Functions & Role, Data files indices and Data Dictionary, Types of Database.

Relational and ER Models: Data Models, Relational Model, Domains, Tuple and Relation, Super keys, Candidate keys, Primary keys and foreign key for the Relations, Relational Constraints, Domain Constraint, Key Constraint, Integrity Constraint, Update Operations and Dealing with Constraint Violations, Relational Operations, Entity Relationship (ER) Model, Entities, Attributes, Relationships, More about Entities and Relationships, Defining Relationship for College Database, E-R Diagram, Conversion of E-R Diagram to Relational Database.

Unit-II

Database Integrity And Normalization: Relational Database Integrity, The Keys, Referential Integrity, Entity Integrity, Redundancy and Associated Problems – Single Valued Dependencies – Normalization, Rules of Data Normalization, The First Normal Form, The Second Normal Form, The Third Normal Form, Boyce Codd Normal Form, Attribute Preservation, Lossless, join Decomposition Dependency Preservation.

File Organization: Physical Database Design Issues, Storage of Database on Hard Disks, File Organization and Its Types, Heap files (Unordered files), Sequential File Organization – Indexed (Indexed Sequential) File Organization, Hashed File Organization, Types of Indexes, Index and Tree Structure.

Unit-III

Structures Query Language (SQL): Meaning – SQL commands, Data Definition Language, Data Manipulation Language – Data Control Language, Transaction Control Language Queries using Order by, Where, Group by, Nested Queries. Joins – Views – Sequences, Indexes and Synonyms, Table Handling.

Advanced SQL: Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

Unit-IV

Transactions and Concurrency Management: Transactions, Concurrent Transactions, Locking Protocol, Serializable Schedules – Locks Two Phase Locking (2PL), Deadlock and its Prevention, Optimistic Concurrency Control.

Database Recovery and Security: Database Recovery meaning, Kinds of failures – Failure Controlling methods, Database errors, Backup & Recovery Techniques, Security & Integrity.

Text Book: Database Systems: R.Elmasri& S.B. Navathe, Pearson.

References:
1. Introduction to Database Management System: ISRD Group, McGraw Hill.
2. Database Management System: R.Ramakrishnan & J.Gehrke, McGraw Hill.
3. Modern Database Management: J.A.Hoffer, V.Rames & H.Topi, Pearson.

MULTI MEDIA SYSTEMS

Theory: 4Hours/Week;	Credits: 4	Marks: 100 (Internal: 20; External: 80)
Practical: 3 Hours/Week	Credits: 1	Marks: 25

Unit - I
Multimedia: Introduction, Definitions, Where to Use Multimedia- Multimedia in Business, Schools, Home, Public Places, Virtual Reality; Delivering Multimedia. Text: Meaning, Fonts and Faces, Using Text in Multimedia, Computers and Text, Font Editing and Design Tools, Hypermedia and Hypertext. Images: Before You Start to Create, Making Still Images, Color.

Unit - II
Sound: The Power of Sound, Digital Audio, MIDI Audio, MIDI vs. Digital Audio, Multimedia System Sounds, Audio File Formats, Adding Sound to Your Multimedia Project. Animation: The Power of Motion, Principles of Animation, Animation by Computer, Making Animations. Video: Using Video, How Video Works and Is Displayed, Digital Video Containers, Obtaining Video Clips, Shooting and Editing Video.

Unit - III
Making Multimedia: The Stages of a Multimedia Project, the Intangibles, Hardware, Software, Authoring Systems Designing and producing: designing the structure, designing the user interface, a multimedia design case history, producing.

Unit - IV
The Internet and Multimedia: Internet History, Internetworking, Multimedia on the Web. Designing for the World Wide Web: Developing for the Web, Text for the Web, Images for the Web, Sound for the Web, Animation for the Web, Video for the Web. Delivering: Testing, Preparing for Delivery, Delivering on CD-ROM, DVD and World Wide Web, Wrapping.

Text Book:
1. Tay Vaughan, "Multimedia: Making it work", TMH, Eighth edition.

References:
1. Ralf Steinmetz and KlaraNaharstedt, "Multimedia: Computing, Communications Applications", Pearson.
2. Keyes, "Multimedia Handbook", TMH.
3. K. Andleigh and K. Thakkar, "Multimedia System Design", PHI.
4. Spoken Tutorial on "GIMP" as E-resource for Learning:-http://spoken-tutorial.org 5. Spoken Tutorial on "Blender" as E-resource for Learning:-http://spoken-tutorial.org

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KHAMMAM-507002

B.A III — V Semester

Core 5: Multimedia Systems and Applications

Unit I

Multimedia: Introduction, Definitions, Where to Use Multimedia- Multimedia in Business, Schools, Home, Public Places, Virtual Reality; Delivering Multimedia.

Text: Meaning, Fonts and Faces, Using Text in Multimedia, Computers and Text, Font Editing and Design Tools, Hypermedia and Hypertext.

Images: Before You Start to Create, Making Still Images, Color.

Unit II

Sound: The Power of Sound, Digital Audio, MIDI Audio, MIDI vs. Digital Audio, Multimedia System Sounds, Audio File Formats. Adding Sound to Your Multimedia Project.

Animation: The Power of Motion, Principles of Animation, Animation by Computer, Making Animations.

Video: Using Video, How Video Works and Is Displayed, Digital Video Containers, Obtaining Video Clips, Shooting and Editing Video.

Unit III

Making Multimedia: The Stages of a Multimedia Project, the Intangibles, Hardware, Software, Authoring Systems

The Internet and Multimedia: Internet History, Internetworking, Multimedia on the Web.

Designing for the World Wide Web: Developing for the Web, Text for the Web, Images for the Web, Sound for the Web, Animation for the Web, Video for the Web.

Text book:

1. Tay Vaughan, "Multimedia: Making it work", TMH, Eighth edition.

Reference books:

1. Ralf Steinmetz and Klara Naharstedt, "Multimedia: Computing, Communications Applications", Pearson.
2. Keyes, "Multimedia Handbook", TMH.
3. K. Andleigh and K. Thakkar, "Multimedia System Design", PHI.
4. Spoken Tutorial on "Blender, GIMP, Inkscape", as E-resource for Learning. http://spoken-tutorial.org

SR&BGNR GOVT ARTS AND SCIENCE DEGREE COLLEGE(A)
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B.A III V Semester

Elective1.A: Computer Networks

Unit I

Introduction: data communication- components, Networks, Protocols and Standards, Line configuration, topology, transmission mode, categories of networks.

OSI and TCP/IP Models: Layers and their functions, comparison of models.

Multiplexing: Many To One/One To Many, Frequency-Division Multiplexing (FDM), Wave-Division Multiplexing (WDM), Time-Division Multiplexing (TDM),

Unit II

Error Detection and Correction: Types of Errors, Detection, Vertical Redundancy Check (VRC), Longitudinal Redundancy Check (LRC), Cyclic Redundancy Check (CRC), Checksum, Error Correction.

Data Link Control: Line Discipline, Flow Control, Error Control, Asynchronous Protocols, Synchronous Protocols, Character-Oriented Protocols, Bit-Oriented Protocols, Link Access Procedures

Switching: Circuit Switching, Packet Switching, Message Switching.

Unit III

Transport Layer: Duties of the Transport Layer, Connection, the OSI Transport Protocol.

Upper OSI Layers: Session Layer, Presentation Layer, Application Layer.

TCP/IP Protocol Suite: Overview of TCP/IP, Network Layer, Addressing, Subnetting, Other Protocols In The Network Layer, Transport Layer

Text Book:

1. Behrouz A. Forouzan, *Data Communication and Networking*, 2nd Ed., Tata McGraw Hill.

Books Recommended

1. A.S. Tenanbaum, *Computer Networks*, 4th Ed., Pearson Education Asia, 2003.
2. D. E. Comer, *Internetworking with TCP/IP*, Pearson Education Asia, 2001.
3. William Stallings, *Data and Computer Communications*, 7th Ed., Pearson education Asia, 2002.

S.R & B.G.N.R Govt. ARTS & SCIENCE COLLEGE (A) , KHAMMAM

B.A III Year VI Semester (Computer Applications) Visual Programming – CBCS SYLLABUS

(core)

Unit I

Introduction to VB: Writing windows application with VB, Programming languages - procedural, object oriented, event driven; VB Environment, Writing first VB project, compiling, debugging, and running the programs.

Controls : Introduction to controls textboxes, frames, check boxes, option buttons, images, setting borders and styles, the shape control, the line control, working with multiple controls and their properties, designing the user interface, keyboard access, tab controls, default & cancel property, coding for controls.

Variables, constants, and Calculation: Data types, naming rules and conversion, constants- named and intrinsic, declaring variables, scope of variables, val function, arithmetic operations, formatting data Counting and accumulating Sums.

Unit II

Decisions and Conditions : If statement, Conditions-comparing numeric variables and constants, comparing strings, compound conditions (and, or, not), nested if statements, using if statements with option buttons & check boxes, displaying message in message box, input validation. Calling event procedures, debugging VB projects, Debugging Step-by-Step Tutorial.

Modular programming: Menus, using common dialog box, writing general procedure.

Forms Handling : Multiple forms, creating, adding, removing forms, hide, show method, load, unload statement, me keyword, referring to objects on a different forms, Variables and constants in Multiple-Forms.

Iteration Handling: Lists Boxes and Combo Boxes, Do/loops, for/next loops, using msgbox function, using string function

Unit III

Arrays: control Arrays, the case structure, single-dimension arrays, for Each/Next statement, table lookup, using list boxes with array, multidimensional arrays.

Database Connectivity: VB and database, using the data control, viewing a database file- step-by-step, Navigating the Database in code, using list boxes and comboboxes as data- bound controls, adding a lookup table and navigation-step-by-step, updating a database file, Recordsets, working with database fields, creating a new Dynaset.

Advanced topics in VB: ActiveX controls, Dynamic link libraries (DLL), Multiple Document interface (MDI).

Text Book:

1. Programming in Visual Basic 6.0 by Julia Case Bradley, Anita C. Millispangh (Tata Mcgraw Hill Edition 2000 (Fourteenth Reprint 2004))

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Marks: 15 + 60 + 25

SR&BGNR GOVT ARTS AND SCIENCE DEGREE COLLEGE(A)
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BA III VI Semester

Elective2.A: Computer Graphics

Unit I

Computer Graphics: Graphs and Charts, Computer-Aided Design, Virtual-Reality Environments, Data Visualizations, Education and Training, Computer Art, Entertainment, Image Processing, Graphical User Interfaces.

Computer Graphics Hardware: Video Display Devices, Raster-Scan System, GraphicsWorkstations and Viewing Systems, Input Devices, Hard-Copy Devices, Graphics Networks, Graphics on the Internet.

Computer Graphics Software: Coordinate Representations, Graphics Functions, Software Standards, Other Graphics Packages, Introduction to OpenGL.

Unit II

Graphics Output Primitives: Coordinate Reference Frames, Specifying A Two-Dimensional World-Coordinate Reference Frame in OpenGL, OpenGL Point Functions, OpenGL Line Functions, OpenGL Curve Functions, Fill-Area Primitives, Polygon Fill Areas, OpenGL Polygon Fill-Area Functions, OpenGL Vertex Arrays, Pixel-Array Primitives, OpenGL Pixel-Array Functions, Character Primitives, OpenGL Character Functions, Picture Partitioning, OpenGL Display Lists, OpenGL Display-Window Reshape Function.

Attributes of Graphics Primitives: OpenGL State Variables, Color and Grayscale, OpenGL Color Functions, Point Attributes, OpenGL Point-Attribute Functions, Line Attributes, OpenGL Line-Attribute Functions, Curve Attributes, Fill-Area Attributes, OpenGL Fill-Area Attribute Functions, Character Attributes, OpenGL Character-Attribute Functions, openGL Antialiasing Functions, OpenGL Query Functions, OpenGL Attribute Groups.

Algorithms for Graphics Primitives and Attributes: Line-Drawing Algorithms, Circle-Generating Algorithms, Ellipse-Generating Algorithms.

Unit III

Two-Dimensional Geometric Transformations: Basic Two-Dimensional Geometric Transformations, Matrix Representations, Inverse Transformations, Two-Dimensional Composite Transformations, Raster Methods for Geometric Transformations, OpenGL Raster Transformations, Transformations between Two-Dimensional Coordinate Systems, OpenGL Functions for Two-Dimensional Geometric Transformations.

Two-Dimensional Viewing: The Two-Dimensional Viewing Pipeline, The ClippingWindow, Normalization and Viewport Transformations, OpenGL Two-Dimensional Viewing Functions, Clipping Algorithms, Two-Dimensional Point Clipping, Two-Dimensional Line Clipping, Polygon Fill-Area Clipping, Curve Clipping, Text Clipping.

Text Book:

1. Donald D. Hearn, M. Pauline Baker, Warren Carithers "Computer Graphics with Open GL" 4th Edition, 2011.

References:

1. J.D. Foley, A. van Dam, S.K. Feiner and J.F. Hughes, *Computer Graphics: Principals and Practices*, 2nd Ed., Addison-Wesley, MA, 1990.

SRBGNR GOVT ARTS & SCIENCE DEGREE COLLEGE(A)
KHAMMAM-507002
Elective 1.B: Object Oriented Programming with C++

Unit I

Object-Oriented Paradigm, Data types, Operators and Expressions, ControlFlows

Unit II

Arrays and Strings, Modular Programming with Functions, Pointers andruntime Binding, Structures and Unions.

Unit III

Classes and Objects, inheritance, virtual functions, Exception Handling,

Text Book:

1. K R Venugopal, Rajkumar Buyya, Mastering in C++, McGrawHill, 2ndEdition, 2013.

Reference:

1. Spoken Tutorial on "C++", as E-resource for Learning. http://spoken-tutorial.org

56

FUNDAMENTALS OF INFORMATION TECHNOLOGY

Hours Per Week: 6 (4T+2P)

Credits: 5

Marks: 50U+35P+15I

Objective: To understand the basic concepts and terminology of information technology and to identify issues related to information security.

UNIT-I: INTRODUCTION TO COMPUTERS:

Introduction, Definition, Characteristics of computer, Evolution of Computer, Block Diagram Of a computer, Generations of Computer, Classification Of Computers, Applications of Computer, Capabilities and limitations of computer.

Role of I/O devices in a computer system. **Input Units:** Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, **Output Units:** Monitors and its types. Printers: Impact Printers and its types. Non-Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.

UNIT -II: COMPUTER ARITHMETIC & STORAGE FUNDAMENTALS:

Binary, Binary Arithmetic, Number System: Positional & Non Positional, Binary, Octal, Decimal, Hexadecimal, Converting from one number system to another.

Primary Vs Secondary Storage, Data storage & retrieval methods. **Primary Storage:** RAM ROM, PROM, EPROM, EEPROM. **Secondary Storage:** Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives.

UNIT-III: SOFTWARE:

Software and its needs, Types of S/W. **System Software:** Operating System, Utility Programs - Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. **Application S/W** and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w.

UNIT-IV: OPERATING SYSTEM:

Functions, Measuring System Performance, Assemblers, Compilers and Interpreters.

Batch Processing, Multiprogramming, Multi Tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux.

UNIT-V: DATA COMMUNICATION:

Data, Communication, Basic Networking Devices, Communication Process, Data Transmission speed, Communication Types(modes), Data Transmission Medias, Modem and its working, characteristics, Types of Networks, LAN Topologies, Computer Protocols, Concepts relating to networking.

SUGGESTED READINGS:

Computer Fundamentals : P.K.Sinha

S.R & B.G.N.R Govt. ARTS & SCIENCE COLLEGE (A), KHAMMAM
I B.COM (COMPUTERS - II SEMESTER) – CBCS SYLLABUS – 2019 – 2020

Programming with C & C++

Hours Per Week: 7 (3T+4P)

Credits: 5

Marks: 50U+35P+15I

Objective: To understand the fundamental concepts of programming in C and Object Oriented Programming using C++.

UNIT-I: Introduction: Computer of Languages-— Flow charts-algorithms– History of C language - Basic Structure – Programming Rules - Commonly used library functions - Executing the C Program - Pre-processors in "C"- Keywords & Identifiers – Constants – Variables: Rules for defining variables - Scope and Life of a Variable— Data types - Type Conversion - Formatted Input and Output operations. **Operators:** Introduction – Arithmetic – Relational – Logical – Assignment - Conditional - Special - Bitwise - Increment / Decrement operator.

UNIT-II: Conditional statements: Introduction - If statements - If-else statements – nested if-else – break statement-continue and exit -statement-goto- statement-Switch statements. **Looping statements:** Introduction- While statements – Do-while statements - For Statements-nested loop statements.

UNIT-III: Functions: Definition and declaration of functions- Function proto type-return statement- types of functions- Built in functions.**User defined functions:** Introduction - Need for user defined functions and component of functions **Arrays:** Introduction - Defining an array - Initializing an array –One dimensional array –Multi dimensional array. **Strings:** Introduction - Declaring and initializing string and Handling Strings- String handling functions. **Pointers:** Features of pointers – Declaration of Pointers – advantages of pointers.

UNIT-IV: Structures: Features of Structures - Declaring and initialization of Structures –Structure within Structure- Array of Structures- Enumerated data type-**Unions**-Definition and advantages of Unions comparison between Structure & Unions. **Object Oriented Programming:** Introduction to Object Oriented Programming - Structure of C++ – Simple program of C++ - Differences between C & C++

UNIT-V:– Classes and Objects: Data Members-Member Functions - Object Oriented -Class-Object-Encapsulation-Abstraction concepts-Polymorphism(Function overloading and Operator Overloading) Inheritance- (Inheritance Forms and Inheritance Types).

SUGGESTED READINGS:

1. Programming with C& C++ :IndrakantiSekhar, V.V.R.Raman&V.N.Battu, Himalaya Publishers.
2. Programming in ANSI C: Balagurusamy, McGraw Hill.
3. Mastering C: K.R. Venugopal, McGraw Hill.
4. C: The Complete Reference: H.Schildt, McGraw Hill.
5. Let Us C: Y.Kanetkar, BPB.
6. Objected Oriented Programming with C++: E. Balagurusamy, McGraw Hill.
7. Mastering C++: KR.Venugopal&R.Buyya, McGraw Hill.
8. Schaums Outlines: Programming with C++: by John R Hubbard.
9. Let Us C++: Y.Kanetkar

RELATIONAL DATABASE MANAGEMENT SYSTEMS

Hours Per Week: 7 (3T+4P)

Credits: 5

Marks: 50U+35P+15I

Objective: to acquire basic conceptual background necessary to design and develop simple database system, Relational database mode, ER model and distributed databases, and to write good queries using a standard query language called SQL.

UNIT-I: BASIC CONCEPTS: Database Management System - File based system - Advantages of DBMS over file based system - Database Approach - Logical DBMS Architecture - Three level architecture of DBMS or logical DBMS architecture - Need for three level architecture - Physical DBMS Architecture - Database Administrator (DBA) Functions & Role - Data files indices and Data Dictionary -Types of Database. Relational and ER Models: Data Models - Relational Model – Domains - Tuple and Relation - Super keys - Candidate keys - Primary keys and foreign key for the Relations - Relational Constraints - Domain Constraint - Key Constraint - Integrity Constraint - Update Operations and Dealing with Constraint Violations - Relational Operations - Entity Relationship (ER) Model – Entities – Attributes – Relationships - More about Entities and Relationships - Defining Relationship for College Database - E- R Diagram - Conversion of E-R Diagram to Relational Database.

UNIT-II: DATABASE INTEGRITY AND NORMALISATION: Relational Database Integrity - The Keys - Referential Integrity - Entity Integrity - Redundancy and Associated Problems – Single Valued Dependencies – Normalisation - Rules of Data Normalisation - The First Normal Form -The Second Normal Form - The Third Normal Form - Boyce Codd Normal Form - Attribute Preservation - Lossless- join Decomposition - Dependency Preservation. File Organisation : Physical Database Design Issues - Storage of Database on Hard Disks - File Organisation and Its Types - Heap files (Unordered files) - Sequential File Organisation - Indexed (Indexed Sequential) File Organisation - Hashed File Organisation
- Types of Indexes - Index and Tree Structure - Multi-key File Organisation - Need for Multiple Access Paths - Multi-list File Organisation - Inverted File Organisation.

UNIT-III: STRUCTURES QUERY LANGUAGE (SQL): Meaning–SQL commands – Data Definition Language - Data Manipulation Language - Data Control Language - Transaction Control Language - Queries using Order by – Where - Group by - Nested Queries. Joins – Views – Sequences – Indexes and Synonyms - Table Handling.

UNIT-IV: TRANSACTIONS AND CONCURRENCY MANAGEMENT: Transactions – Concurrent Transactions - Locking Protocol - Serialisable Schedules - Locks Two Phase Locking (2PL) - Deadlock and its Prevention - Optimistic Concurrency Control. Database Recovery and Security: Database Recovery meaning - Kinds of failures - Failure controlling methods - Database errors - Backup & Recovery Techniques - Security & Integrity - Database Security - Authorization.

UNIT-V: DISTRIBUTED AND CLIENT SERVER DATABASES: Need for Distributed Database Systems - Structure of Distributed Database - Advantages and Disadvantages of DDBMS - Advantages of Data Distribution - Disadvantages of Data Distribution - Data Replication - Data Fragmentation. Client Server Databases: Emergence of Client Server Architecture - Need for Client Server Computing - Structure of Client Server Systems & its advantages.

LAB: SQL QUERIES BASED ON VARIOUS COMMANDS.

SUGGESTED READINGS: 1)Database Systems: R.Elmasri & S.B. Navathe, Pearson.; 2)Introduction to DatabaseManagement System: ISRD Group, McGraw Hill.; 3) Database Management System: R.Ramakrishnan&J.Gehrke, McGrawHill.; 4) Modern Database Management: J.A.Hoffer,V.Rames&H.Topi, Pearson.;5) Database System Concepts: Silberschatz,Korth&Sudarshan,McGrawHill.6)Simplified Approach to DBMS: Parteek Bhaia, Kalyani Publishers.

S.R & B.G.N.R GOVT.ARTS AND SCIENCE COLLEGE (A) , KHAMMAM
B.COM COMPUTER APPLICATIONS – IV SEMESTER - CBCS SYLLABUS – 2019 – 2020
WEB TECHNOLOGIES

Hours Per Week: 7 (3T+4P)

Credits: 5
Marks: 50U+35P+15I

Objective:To gain skills of usage of Web Technologies to design Web pages.

UNIT-I: INTRODUCTION:
Art of creating a web site - Markup language (HTML) – Hypertext - Formatting text - Forms & formulating instructions & formulation elements – Commenting code – Anchors - Back grounds – Images - Hyperlinks – Lists –Tables – Frames - Web design principles.

UNIT-II: AN OVER VIEW OF DYNAMIC WEB PAGES & DYNAMIC WEB PAGE:
An over view of dynamic web pages and dynamic web page technologies: Introduction to Dynamic HTML programing - Cascading style sheets (CSS) - Basic syntax and structure -Events handling - Changing Text and Attributes - Dynamically changing style - Text Graphics and placements - Creating multimedia effects with filters and Transactions.

UNIT-III: JAVA SCRIPT&EVENTS AND EVENT HANDLERS:
Java Script: Introduction - Client side Java script - Server side Java script - Core features - Data types and variables – Operators - Expressions and statements – Functions – Objects – Array - Date and math related objects - Document object model - Event handling.

Events And Event Handlers: General information about Events – Event – OnAbort – OnClick - Ondbl click - Ondrag drop – Onerror - Onfocus - Onkey Press – Onkey Up – Onload - Onmouse Down – Onmouse Move - Onmouse Out – Onmouse Over - Onmove - Onrest – Onresize - Onselect - On submit - Onunload.

UNIT-IV: HYPER TEXT PRE PROCESSOR (PHP):
Introduction to PHP: Declaring variables, data types, arrays, strings, operators, expressions, control structures, functions, Reading data from web form controls like text boxes, radio buttons, lists etc., Handling File Uploads. Connecting to database (MySQL as reference), executing simple queries, handling results, Handling sessions and cookies.

File Handling in PHP: File operations like opening, closing, reading, writing, appending, deleting etc. on text and binary files, listing directories.

UNIT-V: EXTENSIBLE MARKUP LANGUAGE (XML)& JSP:
Extensible Markup Language (XML): Introduction - Creating XML Documents - XML style Sheet - Hyperlinksin XML Document Object Model - XML Query Language.

JSP: Introduction to JSP:The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session for session tracking, connecting to database in JSP.

LAB WORK: CREATING A WEBSITE WITH DYNAMIC FUNCTIONALITY USING CLIENT-SIDE AND SERVER SIDE SCRIPTING.

SUGGESTED READINGS:
1. Web Technology: Pradeep Kumar, HPH
2. Internet & World Wide Web How to Program: Deitel&Deitel, Pearson.
3. Web programming: Chris Bates.
4. HTML & XML An Introduction NIIT, PHI.
5. HTML for the WWW with XHTML & CSS: Wlizabeth Castro, Pearson

S.R & B.G.N.R Govt. ARTS & SCIENCE COLLEGE (A), KHAMMAM

III B.COM (V SEMESTER) Object Oriented Programming in C++ – CBCS SYLLABUS

Unit-I

Object Oriented Programming: Concepts - Benefits - Languages - Structured vs. Object Oriented Programming.

C++: Genesis - Structure of a program - Tokens - Data Types - Operators - Control Structures - C vs C++ - Functions.

Unit-II

Encapsulation - Hiding - Abstract data types - Object & Classes - Attributes - Methods - C++ class declaration - State identity and behaviour of an object.

Purpose of Constructors - Default Constructor - Parameterized Constructors - Copy Constructor - Instantiation of objects - Default parameter value - Object types - C++ garbage collection - Dynamic memory allocation - Meta class / Abstract classes.

Unit- III

Function and Operator Overloading - Overloading Unary and Binary Operators - Data and Type Conversions - Derived Classes - Concept of Reusability - Visibility modes - Types of Inheritance - Single and Multiple Inheritance - Multilevel Inheritance.

Unit-IV

Polymorphism - Virtual - Classes - Pointer to Derived class - Virtual functions - Rules for Virtual function - Pure Virtual functions - Stream Classes - Types of I/O - Formatting Outputs - File Pointers - Buffer - C++ Stream - Unformatted console I/O operations - Functions: get( ) - put( ) - formatted console I /0 operations - 10S class format functions - Manipulators.

Unit- V

Exceptions in C++ Programs - Try and Catch Expressions - Exceptions with arguments. Data Structures: Introduction - Linked list - Stacks - Queues.

SUGGESTED READINGS

Object Oriented Programming in C++ : E. Balaguruswamy, McGrawHill
C++ programming A Practical Approch : Madhusudan Mothe,Pearson

S.R & B.G.N.R Govt. ARTS & SCIENCE COLLEGE (A) , KHAMMAM
III B.COM (V SEMESTER) E-COMMERCE – CBCS SYLLABUS

UNIT-I: INTRODUCTION:

E-Commerce: Meaning-Advantages & Limitations - E-Business: Traditional & Contemporary Model, Impact of E-Commerce on Business Models - Classification of E-Commerce: B2B - B2C - C2B - C2C - B2E - Applications of E-commerce: E-Commerce Organization Applications - E-Marketing - E-Advertising - E-Banking - Mobile Commerce - E-Trading - E- Learning - E-Shopping.

UNIT-II: FRAMEWORK OF E-COMMERCE:

Framework of E-Commerce: Application Services - Interface Layers - Secure Messaging - Middleware Services and Network Infrastructure - Site Security - Firewalls & Network Security - TCP/OP - HTTP - Secured HTTP - SMTP - SSL.

Data Encryption: Cryptography - Encryption - Decryption - Public Key - Private Key - Digital Signatures - Digital Certificates.

UNIT-III: CONSUMER ORIENTED E-COMMERCE APPLICATIONS:

Introduction - Mercantile Process Model: Consumers Perspective and Merchant's Perspective - Electronic Payment Systems: Legal Issues & Digital Currency - E-Cash & E-Cheque - Electronic Fund Transfer (EFT) - Advantages and Risks - Digital Token - Based E- Payment System - Smart Cards.

UNIT-IV: ELECTRONIC DATA INTERCHANGE:

Introduction - EDI Standards - Types of EDI - EDI Applications in Business - Legal - Security and Privacy issues of EDI - EDI and E-Commerce - EDI Software Implementation.

UNIT-V: E-MARKETING TECHNIQUES:

Introduction - New Age of Information - Based Marketing - Influence on Marketing - Search Engines & Directory Services - Charting the On-Line Marketing Process - Chain Letters - Applications of 5P's (Product, Price, Place, Promotion, People) E-Advertisement - Virtual Reality & Consumer Experience - Role of Digital Marketing.

Lab work: Using Microsoft Front Page Editor and HTML in Designing a Static Webpage/Website.

SUGGESTED READINGS :

Frontiers of Electronic Commerce :Ravi Kalakota ,Andrew B whinstone,pearson

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B.Com III Year VI Semester (Computer Applications) – CBCS SYLLABUS

RELATIONAL DATABASE MANAGEMENT SYSTEMS

UNIT-I: BASIC CONCEPTS:

Database Management System - File based system - Advantages of DBMS over file based system - Database Approach - Logical DBMS Architecture - Three level architecture of DBMS or logical DBMS architecture - Need for three level architecture - Physical DBMS Architecture - Database Administrator (DBA) Functions & Role - Data files indices and Data Dictionary - Types of Database. Relational and ER Models : Data Models - Relational Model Domains - Tuple and Relation - Super keys - Candidate keys - Primary keys and foreign key for the Relations - Relational Constraints - Domain Constraint - Key Constraint -Integrity Constraint - Update Operations and Dealing with Constraint Violations - Relational Operations - Entity Relationship (ER) Model Entities Attributes Relationships - More about Entities and Relationships - Defining Relationship for College Database -E-R Diagram -Conversion of E-R Diagram to Relational Database.

UNIT-II: DATABASE INTEGRITY AND NORMALISATION:

Relational Database Integrity - The Keys - Referential Integrity - Entity Integrity - Redundancy and Associated Problems Single Valued Dependencies Normalisation - Rules of Data Normalisation - The First Normal Form -The Second Normal Form - The Third Normal Form - Boyce Codd Normal Form - Attribute Preservation - Lossless-join Decomposition - Dependency Preservation. File Organisation :Physical Database Design Issues - Storage of Database on Hard Disks - File Organisation and Its Types - Heap files (Unordered files) - Sequential File Organisation - Indexed (Indexed Sequential) File Organisation - Hashed File Organisation - Types of Indexes - Index and Tree Structure - Multi-key File Organisation - Need for Multiple Access Paths - Multi-list File Organisation -Inverted File Organisation.

UNIT-III: STRUCTURES QUERY LANGUAGE (SQL):

Meaning SQL commands - Data Definition Language - Data Manipulation Language - Data Control Language - Transaction Control Language - Queries using Order by Where -Group by - Nested Queries. Joins Views Sequences - Indexes and Synonyms - Table Handling.

UNIT-IV : TRANSACTIONS AND CONCURRENCY MANAGEMENT:

Transactions -Concurrent Transactions - Locking Protocol -Serialisable Schedules - Locks Two Phase Locking (2PL) - Deadlock and its Prevention - Optimistic Concurrency Control.

Database Recovery and Security: Database Recovery meaning - Kinds of failures - Failure controlling methods - Database errors - Backup & Recovery Techniques - Security & Integrity-Database Security-Authorization.

UNIT-V: DISTRIBUTED AND CLIENT SERVER DATABASES:

Need for Distributed Database Systems - Structure of Distributed Database - Advantages and Disadvantages of DDBMS - Advantages of Data Distribution - Disadvantages of Data Distribution

-Data Replication - Data Fragmentation. Client Server Databases: Emergence of Client Server Architecture - Need for Client Server Computing - Structure of Client Server Systems & its advantages.

UNIT-I: INTRODUCTION:

Art of creating a web site - Markup language (HTML) Hypertext - Formatting text - Forms & formulating instructions & formulation elements Commenting code Anchors - Back grounds Images -Hyperlinks Lists Tables Frames -Web design principles.

UNIT-II: AN OVER VIEW OF DYNAMIC WEB PAGES & DYNAMIC WEB PAGE:

An over view of dynamic web pages and dynamic web page technologies: Introduction to Dynamic HTML programing -Cascading style sheets(CSS)- Basic syntax and structure -Events handling- Changing Text and Attributes - Dynamically changing style - Text Graphics and placements-Creating multimedia effects with filters andTransactions.

UNIT-III: JAVA SCRIPT:

Introduction - Client side Java script - Server side Java script - Core features - Data types and variables Operators - Expressions and statements Functions Objects Array - Date and math related objects -Document object model-Event handling.

UNIT-IV:EVENTS AND EVENT HANDLERS:

General information about Events Event OnAbort OnClick - Ondbl click - Ondrag drop Onerror - Onfocus - Onkey Press Onkey Up Onload - Onmouse Down Onmouse Move - Onmouse Out Onmouse Over -Onmove- Onrest Onresize-Onselect - On submit -Onunload.

UNIT-V: EXTENSIBLE MARKUP LANGUAGE (XML):

Introduction- Creating XML Documents- XML style Sheet- Hyperlinksin XML Document Object Model-XML Query Language.

LAB WORK: CREATING A WEBSITE WITH DYNAMIC FUNCTIONALITY USING CLIENT-SIDE AND SERVER SIDESCRIPTING.

SUGGESTED READINGS:

- Internet & World Wide Web How to Program: Deitel&Deitel, Pearson.
- Web programming: Chris Bates.
- HTML & XML An Introduction NIIT, PHI.
- HTML for the WWW with XHTML & CSS: Wlizabeth Castro, Pearson
- Internet and Web Technologies: Raj Kamal, McGraw Hill.
- Web Technology: A Developers Perspective:Gopalan&Sivaselvan, PHI.
- The Complete Reference PHP: S.Holzner, McGrawHill.
- Internet Technology and Web Page Design: R.Singh&M.Sonia, Kalyani.
- Web Programming using PHP and MySQL: A.Babu, K.Meena&Sivakumar, HPH.
- Web Technology and Design by Xavier, New Age International Pub.