GOVERNMENT ARTS COLLEGE (AUTONOMOUS)

KUMBAKONAM 612 002

Re - accredited With 'A' Grade by NAAC & Affiliated to Bharathidasan University

DEPARTMENT OF COMPUTER APPLICATIONS

(Effective for those admitted from 2017-2018 onwards)

SYLLABI

B.C.A.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – I

CC 1 - PROGRAMMING IN 'C'

Subject Code: 17U1CA1	Credits: 5	External Marks: 75	Hours: 6

Objectives: *To make the students to understand the basic constructs and structures of C programming language including preliminaries, functions, statements, unions, files and pointers*

Unit I: Introduction To C - Constants, Variables, Data Types - Operators And Expressions. Type Declarations, Arithmetic Operators, Relational And Logical Operators, Type Conversions, Increment And Decrement Operators, Conditional Operators, Bitwise Operators, Assignment Operators, Expressions, Conditional Expressions, Mathematical Functions.

Unit II: Managing Input And Output Operations – Reading a Character, Writing a Character, Formatted Input –Scanf( ), Formatted Output – Printf( ) etc. Decision Making And Branching – Simple IF Statement, IF – ELSE, ELSE – IF, Switch – Case Statements, Break, Continue, GoTo and Labels. Decision Making And Looping.- The WHILE Statement, DO Statement, The FOR Statement, Jumps in Loops etc.

Unit III: Fundamentals of Arrays, Elements of Arrays, Accessing of Arrays, Retrieval Of Arrays - Along Operations in Branching And Loops. Parameter of Passing of Arrays, One Dimensional – Arrays. Two Dimensional – Arrays. Multi Dimensional Arrays. User Defined Function and Strings – Calling a Function, Called a Function, Category Of Function, Recursion, Function With Arrays. Parameter Passing Of Functions, For (;;), Void( ), Main ( ) etc.

Unit IV: Structures And Unions.- Structure Definition Giving Values To Members, Initialization, Comparison of Structure Variables, Arrays of Structures, Arrays Within Structures, Structures Within Structures, Structures And Functions. Unions.

Unit V: Pointers - File Management In C. Understanding Pointers, Accessing the Address of a Variable, Declaring, Initialising, Expressions of Pointers. Pointers And Arrays, Pointer And Functions, Pointer and Structures. Defining and Opening a File, Closing a file, I/O Operations in Files, Random Access To Files, Command Line Arguments.

Text Book:

1. Balagurusamy. E., "Programming In ANSI C", Third Edition, Tata McGraw-Hill , 2006 (ISBN –0- 07- 053477-2)

Reference Book ;

1. "The C Programming Language" - Brain W Kernighan Dennis M Ritchie – Eastern Economy Edition.

2. Byron S Gottfried., ":Programming With C ", Schaum; S Outline Series- Tata McGraw Hill Publications, New Delhi.

****

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.
Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University
B.C.A.
(Effective for those admitted from 2017-2018 onwards)

SEMESTER - I
AC 1 - MATHEMATICS I (ALGEBRA AND CALCULUS)

Subject Code: 17U1CAM1	Credits: 4	External Marks: 75	Hours: 6

UNIT I: Set theory: Basics concepts of set theory – The power set – Some operations on sets –Venn diagrams – Some basic set identities – ordered pairs and n-tuples – Cartesian products.

UNIT II: Matrices: Singular matrices – Inverse of a non-singular matrix using adjoint method – Rank of the matrix – Characteristic equation, Eigen values, Eigen vectors – Cayley Hamilton's theorem (proof not included)– Simple applications only.

UNIT III: Theory of equations: Relation between roots & coefficients – Transformations of equations – Diminishing, Increasing & Multiplying the roots by a constant – Forming equation with the given roots – ` Rolle's theorem – Simple problems.

UNIT IV: Differentiation:Partial differentiation – Euler's theorem–Total Differential coefficients (Proof not included) – Simple problems only.

UNIT V: Integration: Evaluation using integration by parts – properties of definite integral.

TEXT BOOKS:
1. J.P.Tremblay , R. Manohar, Discrete mathematical structures with applications to computer science , Tata McGraw-Hill publishing company limited, 2003, (Unit I)
2. T.K. Manickavasagam Pillai & Others, Algebra volume I & II, S.V. Publications, 1985 Revised editions (Unit II & III)
3. S. Narayanan & T.K. Manickavasagam Pillai, Calculus Volume II, S. Viswanathan Private limited, 2003 (Units IV & V)

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – I

CP 1 – LAB - I C PROGRAMMING

Subject Code: 17U1CAP1	Credits: 3	External Marks: 60	Hours: 4

Objectives: *To make the students understand the basic constructs and structures of C programming language including preliminaries, functions, statements, unions, files and pointers in practical way through programs using these items and to create excellent programs with various aspects of C Language.*

1. To create Temperature conversion – from Fahrenheit to Celsius & Celsius to Fahrenheit.

2. To explain the solutions of a Quadratic equation in all cases.

3. To explain the sum of series by using math functions in Sine, Cosine, Tangent and Exponential etc.

4. To Read and Print the characters and strings by using scanf ( ), printf ( ) format codes of I/O functions.

5. To create Pay bill calculations by using Switch – Case Expressions, etc.

6. To create an Illustration of Nested Loops along with Break and Continue.

7. To create an Ascending & Descending order of Numbers by using Arrays.

8. To create a program for Sorting of Names in the Alphabetical order.

9. To create matrix - Array of Addition – subtraction – multiplication by using various functions.

10. To create a program using Arrays within the Structure.

11. To create a program using Structures as Function Parameters.

12. To create a program for Book shop Inventory.

13. To create a program using Accessing Addresses of variables.

14. To create a program for Pointers as Function Parameters.

15. Writing - Reading from a File operation in the C language.

****

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – II

CC 2 – JAVA PROGRAMMING

Subject Code: 17U2CA2	Credits: 5	External Marks: 75	Hours: 6

Objectives: *To understand the basic concepts of Object Oriented Programming with Java language.*

Unit I: Fundamentals of Object Oriented Programming: Basic Concepts- Constants - Integer Constants - Real Constants-Single Character Constants - String Constants – Variables - Data types - Declaration of Variables - Giving values to Variables - Scope of Variables - Type Casting. Operators - Arithmetic Operators - Relational Operators - Logical Operators -Assignment Operators - Increment and Decrement Operators - Conditional Operators - Bitwise Operators - Special Operators.

Unit II: Decision Making and Branching**:** Decision Making with if Statement - Simple if Statement - The if…else Statement - Nesting of if…else Statement - The else if Ladder - The Switch Statement - The Conditional Operator. Decision Making and Looping: Introduction - The While Statement - The do Statement - The For Statement - Additional features of for loop-Nested of for loops - Jump in Loops - Jumping out of a loop - Skipping a part of a loop.

Unit III: Classes, Objects and Methods: Defining a Class - Adding Class Members - Accessing Class Members – Constructors - Methods Overloading - Static Members - Nesting of Methods –Inheritance - Overriding Methods - Final Variable and Methods - Final Variable and Methods -Final Classes - Abstract Methods and Classes - Array and String - Arrays - One Dimensional Arrays - Two Dimensional Arrays - String Arrays.

Unit IV: Interfaces, Multiple Inheritance - Defining Interfaces - Extending Interfaces - Implementing Interfaces - Accessing Interface Variables - Packages - Java API Packages - Using System Packages - Creating and Accessing Packages - Adding class to a Packages - Multi Threaded Programming - Creating Threads - Extending the thread class - Stopping a thread -blocking a thread - Life cycle of a thread.

Unit V: Managing Errors and Exceptions - Types Of Errors - Exceptions - Syntax of Exception handling code - Multiple Catch Statements - Using Finally Statement - Throwing Own Exceptions. Applet Programming - Local and Remote Applets - Building Applets Code - Applet Life cycle designing a Web Page - Adding applet of Html File - Running the applet - Managing Input/Output files in Java - Stream Classes - Byte Stream Classes - Character Stream Classes -Creation of Files - Reading/Writing Characters - Reading/Writing Bytes.

Text Book:

Programming with JAVA, E.BALAGURUSAMY, Tata McGraw-Hill Publishing Company Limited, New Delhi.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.
Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University
B.C.A.
(Effective for those admitted from 2017-2018 onwards)

SEMESTER - II
AC 2 - MATHEMATICS II (OPERATIONAL RESEARCH)

Subject Code: 17U2CAM2	Credits: 4	External Marks: 75	Hours: 6

UNIT I: Operations Research : Introduction – Basics of OR – OR & Decision Making – Role of Computers in OR Linear Programming formulations& Graphical solution of two variables – Canonocal & Standard forms of LPP.

UNIT II: Simplex Method : Simplex Method for <, =, > constraints – Charne's method of penalities – two phrase simplex method.

UNIT III: Transporation problem : Transporation algorithm – Degeneracy algorithm – Degeneracy in Transportation problem, Unbalanced transportation problem – IBFS- NWCR, LCM/MMM, VAM's method and MODI method.

UNIT IV: Assignment Algorithm – Balanced and unbalanced assignment problem – Hungarian method.

UNIT V: Networks: Network – Fulkerson's rule Measure of activity – PERT computation – CPM Computation.

TEXT BOOK:

Manmohan & Gupta, Operations Research, sultan chand publishers, New Delhi.

References:
1. Prem Kumar Gupta and D.S. Hira Operations Research : An introduction, S. Chand and Co., Limited, New Delhi.
2. Hamdy A. Taha, Operations Research (7th Edition), Mc Millan Publishing Company, New Delhi, 1982.

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – II

CP 2 – LAB - II JAVA PROGRAMMING

Subject Code: 17U2CAP2	Credits: 4	External Marks: 60	Hours: 4

Objectives: *To impart Practical Training in Java Programming Language.*

1. Write a program to sort the given numbers using Arrays.

2. Write a program to implement the FIND and REPLACE operations in the given multiple text.

3. Write a program to implement a calculator to perform basic Arithmetic Operations.

4. Write a program to find the area of a rectangle using Constructor.

5. Write a program to find the student's percentage and grade using Command Line Arguments.

6. Write a program to draw circle or triangle or square using Polymorphism and Inheritance.

7. Implement multiple inheritance concepts in java using Interface, you can choose your

    own example of a company or education institution or a general concept which requires

    the use of Interface to solve a particular problems.

8. Write a program to create threads and assign priorities to them

9. Write a program to develop an applet to play multiple audio clips using Multithreading.

10. Write a program to create a window with three check boxes called red, green and blue.

    The applet should change the colors according to the selection.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – III

CC 3 – PHP SCRIPTING LANGUAGE

Subject Code: 17U3CA3	Credits: 5	External Marks: 75	Hours: 6

Objectives: *To Understand the Concepts of PHP and Ajax.*

Unit I: Essentials of PHP: Introduction of PHP-Variables-Constants-PHP Internal Data types-Operator and Flow Control-Arithmetic-Assignment-Logical-Bitwise Operators-Using IF Statements-IF Else Statements-ELSE IF Statements-Switch Statements-Using For Loops-While Loop-Do-While Loop-String Functions-Arrays-Handling Array with Loops.

Unit II: Creating Functions-Passing Array to Functions-Passing by Reference-variable scope in PHP-Accessing global data-Static variables-Reading data in Web Pages-Handling Text Fields-Check boxes-Radio buttons-List boxes-password controls-Hidden controls-Image Maps-File Uploads-PHP Browser-Handling Power-Using PHP's Server Variables-HTTP Heads-client-side Data validation.

Unit III: Object oriented Programming-Classes-Objects Access to properties and methods-public Access-private access- constructors and Inheritance-overriding method-Advance Object Oriented Programming-Creating Static Methods -Create Abstract Class-Create Interface-Supporting Object Iteration - creating class constant-using the Final keyword.

Unit IV: File Handling-Opening File using fopen-Reading-Closing File working with Database-Create My SQL Database update Inserts-Delete Records-Session, Cookies and FTP-Setting Cookies-Reading-Deleting Cookies-working with FTP-Download-upload-Delete a File with FTP.

Unit V : Ajax-creating started with Ajax-writing Ajax-create the XML HTTP Request object-opening the XML HTTP Request object-Advanced Ajax-Handling concurrent Ajax Request with multiple XML HTTP Request objects-Drawing Images on the server-create Display Drawing Lines-Rectangle-Ellipses.

Text Book:

"The Complete Reference PHP Covers PHP5.2",Mc Graw Hill Education ,Steven Holzner , 2008.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

B.C.A.,

(Effective for those admitted from 2017-2018 onwards)

SEMESTER - III

AC 3 - PRINCIPLES OF ACCOUNTANCY

Subject Code: 17U3CACO1	Credits: 4	External Marks: 75	Hours: 6

Unit I:　　Meaning and definition of Accounting – Objectives – Attributes – Functions – Distinction between Bookkeeping and Accounting – Importance – Advantages –basic accounting terms.

Unit II:　　Fundamental Concept of Accounting – Basic Concepts and conventions – modified Principles – Types – Meaning of double entry system – Basic Accounting (Golden) rules.

Unit III:　　Meaning of Journal – preparation of journal entries – Meaning of Ledger – preparation of ledger – Distinction between Journal and Ledger – Preparation of Trial balance.

Unit IV:　　Subsidiary Books: Meaning and characteristics of Single Column Cash Book – Meaning and characteristics of Double Column Cash Book – Meaning and characteristics of Petty Cash Book.

Unit V:　　Final Accounts of sole Traders: Preparation of Trading Account, Profit and Loss Account and Balance Sheet (Simple adjustments only).
(Closing stock, outstanding expenses, prepaid expenses and Deprecation)

(THEORY AND PROBLEMS SHALL BE IN THE RATIO OF 60:40 RESPECTIVELY)

BOOKS RECOMMENDED:

1. PRINCIPLES OF ACCOUNTING　　: S.P. JAIN , K.L. NARANG
2. ADVANCED ACCOUNTANCY　　: T.S. REDDY, A. MURTHY
3. ADVANCED ACCOUNTANCY　　: M.C. SHUKALA, T.S.GREWEL & S.C. GUPTA

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – III

CP 3 – LAB - III PHP SCRIPTING LANGUAGE

Subject Code: 17U3CAP3	**Credits: 4**	**External Marks: 75**	**Hours: 4**

Objectives: *To Impart Practical Training in PHP Programming Language.*

1. Write a program for Selecting Random Variables.

2. Write a program Using Controls and Functions.

3. Develop a Program and Check Message Passing mechanism between Page.

4. Design a Program Using string Function and Arrays.

5. Develop a Program Using Parsing Functions (Use Tokenizing).

6. Write a Program and Check Regular Expression HTML Functions, Hashing

   Function.

7. Develop a Program and Check File System Functions.

8. Develop a Program for Multiplication Table.

9. Design a Program Using Session.

10. Develop a Program Using Cookies and session.

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – III

NME 1 – STATISTICS AND NUMERICAL ANALYSIS

Subject Code: 17U3CANE2	Credits: 2	External Marks: 75	Hours: 2

Objectives: *To study in detail about the descriptive statistics and various types of Numerical Analysis.*

Unit I: Mean, Median, Mode and Standard Deviation – Merits and demerits – Simple problems.

Unit II: Correlation –Definition, Types, methods-scatter diagram, Karl – Pearson's co – efficient of correlation, Rank correlation –Properties and uses. (Simple problems)

Unit III: Regression –Definition, properties of Regression co-efficient, Regression equations (two variables) - Simple problems. Difference between Correlation and Regression.

Unit IV: Numerical Differentiation – Forward and Backward differentiate. Properties of operators E and Δ - Newton's Forward, Backward and Lagrange's formulae – Simple problems.

Unit V: Numerical Integration –By Trapezoidal, Simpson's 1/3, 3/8 and Weddle's rules – Simple problems.

Books for Reference:

1. Fundamentals of Mathematical Statistics -Gupta S.C. and V.K. Kapoor - Sultan & Sons, New Delhi.
2. Statistical method -S.P.Gupta, Sultan & Sons, New Delhi.
3. Introductory methods of Numerical analysis- S.S. Sastry –prentice Hall of Indian private limited, New Delhi.
4. P.Kandasamy, K.Thilagavathy, K.Gunavathy- Numerical analysis&S.Chand, New Delhi.

SEMESTER – IV

CC 4 – DATABASE MANAGEMENT SYSTEM

Subject Code: 17U4CA4	Credits: 5	External Marks: 75	Hours: 5

Objectives: *To provide the basic concepts of the Database Systems including Data Models, Storage Structure, Normalization and SQL.*

Unit I: Introduction: Database-System Applications- Purpose of Database Systems - View of Data -- Database Languages - Database Design -Data Storage and Querying- Transaction Management -Data Mining and Analysis - Database Architecture - Database Users and Administrators - History of Database Systems.

Unit II: Relational Model: Structure of Relational Databases -Database Schema - Keys - Schema Diagrams - Relational Query Languages - Fundamental Relational Algebra Operations -Additional Relational Algebra Operations- Extended Relational Algebra Operations - Null Values - Modification of the Database.

Unit III: SQL:Overview of the SQL Query Language - SQL Data Definition - Basic Structure of SQL Queries - Set Operations - Aggregate Functions -Null Values-Nested Sub queries - Modification of the Database -Join Relations - SQL Data Types and Schemas –Integrity Constraints-Embedded SQL- Dynamic SQL. Authorization.

Unit IV: Relational Languages: The Tuple Relational Calculus - The Domain Relational Calculus Database Design and the E-R Model: Overview of the Design Process - The Entity Relationship Model - Entity-Relationship Diagrams-Entity-Relationship Design Issues - Extended E-R Features – Reduction to relational Schema - Other Aspects of Database Design.

Unit V: Relational Database Design: Features of Good Relational Designs - Atomic Domains and First Normal Form - Decomposition Using Functional Dependencies - Functional-Dependency Theory - Decomposition Using Functional Dependencies - Decomposition Using Multivalued Dependencies- More Normal Forms - Database-Design Process-Modelling temporal data.

Text Book:

Database System Concepts, Fifth edition, Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill-2006.

Reference Book:

DBMS Designing and Business Applications by GERALD V.POST-Mc Graw Hill publications

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.
Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University
B.C.A.,
(Effective for those admitted from 2017-2018 onwards)

SEMESTER - IV

AC 4 - ORGANISATIONAL BEHAVIOUR

Subject Code: 17U4CACO2	Credits: 4	External Marks: 75	Hours: 5

Unit I: **Organisational Behaviour:** Meaning, Nature, Objectives and Importance of Organisational Behaviour – Key elements of Organisational Behaviour – Need for studying Organisational Behaviour.

Unit II: **Individual Behaviour:** Individual differences – Factors influencing individual behaviour.
Learning: Meaning – Definitions – Characteristics of Learning – Factors determining learning.

Unit III: **Personality:** Meaning and Definition – Factors determining personality – personality factors influencing individual behaviour – Frued's approach to personality development – Erickson's approach to personality development.

Unit IV: **Perception:** Definition – Factors – Process of Perception – Qualities of perceiver – Qualities of perceived.

Unit V: **Attitudes:** Meaning & Definition - Characteristics – Factors influencing the formation of attitude – Measurement of attitude.
Values: Meaning and definition – similarity between values and attitude - Differences between attitude and values – Classification of values – factors influencing the formation of values.

BOOKS RECOMMENDED

1. ORGANISATIONAL BEHAVIOUR : L.M. PRASAD
2. ORGANISATIONAL BEHAVIOUR : S.S. KHANKA
3. ORGANISTAIONAL BEHAVIOUR : J.S. CHANDAN
4. ORGANISATIONAL BEHAVIOUR : J.JAYASANKAR

SEMESTER – IV

CP 4 – LAB – IV RDBMS (MYSQL)

Subject Code: 17U4CAP4	Credits: 4	External Marks: 60	Hours: 4

1. Creating & updating and inserting into database & simple queries.

2. Uses of Select statement - for queries.

    a. AND' OR' NOT Operators' WHERE clause.

    b. UNION' INTERSECTION' MINUS.

    c. Sorting and grouping.

3. Nested queries using SQL.

    a. Sub queries.

    b. Join.

4. Built-in-functions of SQL.

5. Use of indexes' creating views and querying in views.

6. Cursors' triggers and stored procedures and functions.

7. Case studies:

    a. Student evaluation systems.

    b. Pay - roll system

    c. Income tax calculations.

    d. Seat reservation Problems

    e. Mark - sheet Preparation.

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – IV

SBE 1 – ESSENTIALS OF LANGUAGE AND COMMUNICATION

Subject Code: 17U4CASE1	Credits: 2	External Marks: 75	Hours: 2

Objectives:

- *Enable students to build a repertoire of functional vocabulary and to move from the*
- *Lexical level to the syntactic level train students to summon words, phrases relevant to the immediate communication*
- *Tasks enable students to comprehend the concept of communication*
- *Teach students the four basic communication skills – Listening, Speaking, Reading and Writing*

Unit I: Recap of language skills – vocabulary, phrase, clause, sentence

Unit II: Fluency Building – word match, reading aloud, recognition of attributes, parts of speech in Listening and reading, listening – reading comprehension

Unit III: Principles of Communication – Communication as coding and decoding – signs and symbols – verbal and non –verbal symbols – Language AND communication; language VS communication – media/channels for communication

Unit IV: Types of Communication- functional, situational, verbal and non-verbal, interpersonal, group, interactive, public, mass line, dyadic – with illustrations

Unit V: LSRW in Communication – Listening – active vs passive (Talk less, listen more); Speaking - Speech vs enunciation (mind your tone); Reading –Focus on the structure not on the theme alone; Writing – Precise, not only précis writing

Practical's: Units 1 and 2: Record Book

Units 3 and 4: Scrap Book

Unit 5: Group Games/Activities

Text Book: Essentials of Language and Communication. UOM-S001 for the Students of University of Madras

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – V

CC 5 – DATA STRUCTURES AND ALGORITHMS

Subject Code: 17U5CA5	Credits: 5	External Marks: 75	Hours: 5

Objectives: *To introduce concepts of data structuring components like tree, lists, stack and queue and to promote the knowledge on algorithm building and understanding.*

Unit I: Introduction: History of algorithms – Structure and properties of algorithms – development of algorithm – data structure and algorithms – definition and classification. Analysis of Algorithms: Efficiency of algorithms – apriori algorithms – asymptotic notations – time complexity of an algorithm using O notation – polynomial vs exponential algorithms – average, best and worst case complexities – recursive program. Arrays: Introduction – array operations – number of elements in an array – representation of arrays in memory.

Unit II: Stacks: Introduction – stack operations – applications. Queues: Introduction – operation of queues – circular queues – applications. Linked Lists: Introduction – singly linked list – circularly linked list – doubly linked list – multiply linked list.

Unit III: Trees and Binary trees: Introduction – definition and basic terminologies – representation of trees. Binary trees: Basic terminologies and types – representation of binary trees – binary tree traversals – threaded binary trees. Graph: Introduction – Definition of basic terminologies – representation of graphs – graph traversals.

Unit IV: Binary search trees and AVL trees: Introduction - definition and operations. AVL trees: definition and operations. File organization: Introduction – files – keys – basic file operations – heap or pile organization – sequential file organization – indexed sequential file organization – direct file organization.

Unit V: Searching: Introduction – linear search – transpose sequential search – interpolation search – binary search – Fibonacci search – other search techniques. Internal Sorting: Introduction - bubble sort – insertion sort – selection sort – merge sort – shell sort – quick sort – heap sort – radix sort.

Text Book:

Data Structures and algorithms – **G.A.Vijayalakshmi Pai** (G A V PAI)– Taba McGraw-Hill Publishing company limited.

Reference Book:

(1) Fundamentals of Data structure – Ellis horowwiz, Sartaj sahni and Senguthevar Rajasekaran.

(2) Fundamentals of Computer algorithms – Ellis horowwiz, Sartaj sahni and Senguthevar Rajasekaran – Galgotia publications 2001 (3) Data structures – LIPSCHUTA – Taba McGraw-Hill.

SEMESTER – V

CC 6 – DIGITAL COMPUTER FUNDAMENTALS AND MICROPROCESSORS

Subject Code: 17U5CA6	Credits: 5	External Marks: 75	Hours: 5

Objectives: *To disseminate knowledge of digital principles, combinational and sequential logic fundamentals, to introduce microprocessor, its principles and its applications to undergraduate students of computer science and applications*

Unit I: Number Systems and Codes: Binary, Octal and Hexadecimal number systems- conversion between number systems-complements- binary arithmetic- binary codes Boolean Algebra and Logic Gates: AND, OR, NOT, NAND, NOR, XOR, XNOR gates – Truth tables- Applications of XOR gates- Fundamentals of Boolean Algebra- Boolean functions- Minterms and Maxterms- Laws and theorems of Boolean algebra- Demorgan's theorems- the Universal building blocks – NAND and NOR gates

Unit II: Simplification of Boolean Expressions: Canonical SOP and POS forms- Algebraic simplification- Karnaugh Maps- SOP and POS Simplification- NAND / NOR implementation of Boolean expressions- Don't care conditions- Overlapping, Rolling groups, eliminating redundant groups Combinational Logic Circuits: Half and Full Adders- Half and Full Subtractors- Parallel binary adder- Multiplexer & De-Multiplexer- Encoder & Decoder

Unit III: Sequential Logic Circuits: NAND, NOR latches- SR Flipflop-JK Flipflop- Edge triggering- PRESET and CLEAR inputs- Shift Register, Universal Shift Register-Asynchronous and Synchronous counters- BCD counter

Unit IV: Microprocessor architecture: Introduction- Intel 8085: ALU-Timing and Control unit-Registers-Data and Address Bus-Pin configuration-Intel 8085 instructions—Instruction cycle- Timing diagram- RISC and CISC processors- Instruction Set for Intel 8085: Instruction and Data formats- Addressing modes- Status Flags- Intel 8085 instruction groups

Unit V: Assembly Language Programming: Addition- Subtraction- Decimal addition / subtraction- Complement Arithmetic- Shifting- Masking- concept of Arrays and operation on array values- Sum of Series- Multiplication- Division- Multibyte addition / subtraction
Peripheral devices and Interfacing: Introduction- Address space partitioning- Memory and I/O interfacing- Data transfer schemes- Interrupts of Intel 8085- Interfacing devices andI/O devices- I/O ports- Programmable Peripheral Interface (PPI)- Architecture of Intel 8255

Text book:

1.Thomas Bartee C, Digital Computer Fundamentals. TMH, 3rd Edition

2.Malvino and Leech, Digital principles and Applications, TMH, 2nd Edition

3. Badri Ram, Fundamentals of Microprocessors and Microcomputers, Dhanpat

Rai Publications (P) Ltd, 4th Edition

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – V

CC 7 – COMPUTER NETWORKS

Subject Code: 17U5CA7	Credits: 5	External Marks: 75	Hours: 5

Objectives: *To understand networking concepts and basic communication model, network architectures and components required for data communication. To analyze the function and design strategy of physical, data link, network layer and transport layer.*

Unit I: Introduction to Data Communication and Networking: Fundamental Concepts – Data Communications- Protocols – Standards – Analog and Digital Signals – Amplitude, Period, Frequency and Phase. Data Transmission and Multiplexing: Parallel and Serial Communication – Multiplexing – Types of Multiplexing.

Unit II: Transmission Errors Detection and Correction: Error classification – Types of Errors – Error Detection: Vertical Redundancy Check (VRC) - Longitudinal Redundancy Check (LRC) – Cyclic Redundancy Check (CRC) – Checksum. Transmission Media: Guided Media - Unguided Media.

Unit III: Network Topology: - Mesh – star – Tree – Ring – Bus – Hybrid Topologies. Switching: Circuit switching – Packing Switching – Message Switching. Routing Algorithms: Distance Vector Routing. Networking Protocols and OSI Model: The OSI Model – OSI Layer Function.

Unit IV: Data Link Layer: Flow Control: Stop and Wait protocol – Sliding Window Protocol. Error Control: Go – Back n ARQ – Selective Repeat. Data Link Layer protocols: Asynchronous data link layer – Synchronous Data Link Layer. ISDN: Back ground of ISDN – ISDN Architecture.

Unit V: X.25 Protocol: Characteristics of X.25 – Packet Format. Internetworking Concepts and Devices: Internetworking Devices – Repeaters – Bridges – Routers – Gateways. Transport Layer: Transmission Control Protocol (TCP) – User Datagram Protocol (UDP). Application Layer: Electronic Mail – File Transfer Protocol (FTP) – Telnet.

Text Book:

Computer Communication Networks - Achyut S Godbole and Atul Kahate. Tata McGraw Hill.

Reference Book:

Computer Networks 4th Ed, Andrew S. Tanenbaum, Prentice Hall

SEMESTER – V

CP 5 - LAB – V DIGITAL ELECTRONICS AND MICROPROCESSORS

Subject Code: 17U5CAP5	Credits: 4	External Marks: 60	Hours: 4

Objectives: *To make students know the fundamental principles behind digital electronics including basic gates, combinational and sequential logic and to introduce microprocessor, its principles and its applications on practical scope:-*

DIGITAL ELECTRONICS LAB

1. Basic gates using IC- AND, OR, NOT, NAND, NOR, XOR, XNOR gates
2. Universal building blocks – NAND and NOR gates
3. Simplification of Boolean Expressions: Canonical SOP / POS form (Karnaugh Map) and designing Combinational logic circuit
4. Combinational Logic Circuits: Half and Full Adders- Half and Full Subtractors
5. Multiplexer & De-Multiplexer
6. Encoder & Decoder
7. Sequential Logic Circuits: NAND, NOR latches
8. D-Flip Flop, JK Flip flop
9. Shift Register
10. Asynchronous counter
11. BCD counter

MICROPROCESSORS LAB-Assembly language programming

12. Simple Addition / Subtraction
13. Decimal addition / subtraction
14. Complement Arithmetic
15. Shifting values / Masking values
16. Arrays and operation – Addition
17. Find Largest from Array data values
18. Sum of Series
19. Multiplication- Division
20. Multibyte addition / subtraction
21. Peripheral devices and Interfacing through I/O ports- Programmable Peripheral Interface (PPI)- Intel 8255 Operations

Text Book:

1. Thomas Bartee C, Digital Computer Fundamentals. TMH, 3rd Edition

2. Malvino and Leech, Digital principles and Applications, TMH, 2nd Edition

3. Badri Ram, Fundamentals of Microprocessors and Microcomputers, Dhanpat Rai Publications (P) Ltd, 4th Edition

SEMESTER – V

EC 1 – SOFTWARE ENGINEERING

Subject Code: 17U5CAEC1	Credits: 4	External Marks: 75	Hours: 5

Unit I: Introduction to Software Engineering: Definitions – Size Factors – Quality and Productivity Factors. Planning a Software Project: Defining the Problem – Developing a Solution Strategy – Planning the development Process – The Phased Life – Cycle Model – Milestones, Documents and Reviews – The Cost Model – The Prototype Life – Cycle Model – Planning an Organizational Structure – Project Structure – Programming Team Structure.

Unit II: Software Cost Estimation: Software Cost Factors – Programmer Ability – Product Complexity   Product Size – Available Time – Required Level of Reliability – Level of Technology – Software Cost Estimation Techniques – Expert Judgment– Delphi Cost Estimation Work Breakdown Structure – Algorithmic Cost Models. Staffing – Level Estimation – Estimating Software Estimation Costs.

Unit III: Software Requirements Definition: The Software Requirements Specification– Formal Specification Techniques– Relational Notations – State Oriented Notations .Software Design: Fundamental Design Concepts – Abstraction – Information Hiding – Structure – Modularity Concurrency – Verification – Aesthetics – Modules and Modularization Criteria – coupling and cohesion.

Unit IV: Design Notations – Data Flow Diagrams – Structure Charts – HIPO Diagrams – Pseudocode Structured Flowcharts – Structured English – Decision Tables – Design Techniques – Stepwise Refinement – Structured design – Integrated Top – down development – Jackson Structured Programming – Implementation Issues - Structured Coding Techniques – Coding Style – Standard and Guidelines – Documentation Guidelines.

Unit V: Verification and Validation Techniques: Quality Assurance – Walkthroughs and Inspections – Unit Testing and Debugging – System Testing – Software Maintenance - Enhancing Maintainability during Development – Managerial Aspects of Software Maintenance – Configuration Management.

TextBook: Software Engineering Concepts– Richard Fairley, 1997,

SEMESTER – V

EC 1 – SYSTEM ANALYSIS AND DESIGN

Subject Code: 17U5CAEC1	Credits: 4	External Marks: 75	Hours: 5

Unit I: Business Problem & Computers : Overview of Business Organization – Information needs & systems – Some typical problems – System life cycle – System study – Feasibility Study

Unit II: System Analysis – Initiation of Analysis – The Process of Analysis – System Design – Design factors – Design Constraints – Processing Techniques – The Process of design – Output Design – input Design – Process Design – File Data Base Design

Unit III: Analysis & Design Tools – Data Flow Diagram – Data Dictionary – Entity Relationship Diagram – Decision Tree – Decision Table – Structured English – Structure Charts – Grid Charts – Layout Charts – Configuration Selection & Acquisition – Detailing the configuration – Storage requirements – Internal Memory – Processors – Terminals – Printers

Unit IV: File Organization & Design : Functional Classification of Files – File Structure – File Organization – Inverted File – Security & Controls – Risk management – Physical Security – Access Control – Data Control – Other Security & control measures

Unit V: Post – Design phases – Develop Software – Installation & Changes-over-System Operation & maintenance – Systems Applications – Financial Accounting – Inventory Accounting System – Equipment Maintenance – Bank Operations – Production Planning & control – Process Control – Robotics

Text Book:

1. System Analysis & Business Applications – Rajesh Nalk & Swapna Kishore, Wheeler Publishing – 1st edition 1994

Reference Book:

1. Introducing Systems Analysis & Design – Ellas M. Awad – Galgotia Publications (P) Ltd., (Second Edition)

****

SEMESTER – V

EC 1 – SOFTWARE TESTING

Subject Code: 17U5CAEC1	Credits: 4	External Marks: 75	Hours: 5

Unit I: Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing – Challenges in White-Box Testing.

Unit II: Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing - Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase Testing – Scenario Testing – Defect Bash.

Unit III: System and Acceptance Testing: system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing – Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.

Unit IV: Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. Regression Testing: What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

Unit V: Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting –Best Practices. Test Metrics and Measurements: Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics.

Text Book:

1.Software Testing Principles and Practices – Srinivasan Desikan & Gopalswamy Ramesh, 2006, Pearson Education.

Reference Book:

1.Renu Rajani , Pradeep Oak –" Software Testing - Effective Methods , Tools & Techniques " – Tata McGraw Hill

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – V

SBE 2 – INTRODUCTION TO COMPUTER GRAPHICS

Subject Code: 17U5CASE2	Credits: 2	External Marks: 75	Hours: 2

Objectives: *To promote students with ideas of computer graphics and its applications.*

Unit I: A survey of computer graphics: Computer aided design – presentation graphics – computer art – entertainment – education and training – visualization – image processing – graphical user interface.

Unit II: Overview of graphics systems: Video display devices – Raster scan systems – Random scan systems – graphics monitors and workstations – input devices – hard copy devices – graphics software.

Unit III: Attributes of output primitives: Line attributes – curve attributes – color and grayscale levels – area fill attributes – character attributes – bundled attributes – inquiry functions.

Unit IV: Two dimensional geometric transformations: Basic transformation – matrix representation – composite transformation – other transformation.

Unit V: Computer Animation: Design of animation sequence – general computer animation functions – raster animation – computer animation languages – key frame systems – morphine – simulating accelerations – motion specification – direct motion specification – goal directed systems – kinematics and dynamics.

Text Book:

Computer graphics – Donald Hearn & M. Pauline Baker – Prentice – Hall of India private limited.

Reference Book:

Newman William M, & Sproull Robert F, Principles of interactive computer graphics, Second edition, Tata –McGraw Hill, 1 (ISBN 0-07-463293-0)

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – V

SBE 3 – CURRENT TRENDS AND TECHNOLOGY IN COMPUTING

Subject Code: 17U5CASE3	Credits: 2	External Marks: 75	Hours: 2

Objectives: *As* technology *plays a larger role in education, any predictions concerning the future of education must include an analysis of* technological trends.

Unit I: Introduction to Parallel Computing – Motivating Parallelism – Scope of Parallel Computing – parallel programming platforms: Implicit parallelism trend in microprocessor architecture – Limitations of memory system performances – Dichotomy of parallel platforms – Physical organization of platforms Communication cost in parallel machines – Routing mechanism for interconnection networks

Unit II: Introduction to mobile computing- Applications-vehicles- Mobile and Wireless devices- History of wireless communications- Mobile Communication Market – A Simplified and reference model – Overview – Wireless Transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulation – Spread Spectrum.

Unit III: Cloud computing – History of Cloud Computing – Cloud Architecture – Cloud Storage – Why cloud computing Matters – Advantages of Cloud computing – Disadvantages of Cloud Computing – Companies in the Cloud Today – Cloud Services .

Unit IV: Data Warehousing - DataWarehousing Environment-Difference between Operational DataBase and Data Warehouse-Multi dimensional data model:Data Cubes,Schemas,Measures-DW Architectute- Steps for design and construction of dw-3-tier Data Warehouse Architecture-DW Implementation:Efficient computation of Data cubes-Efficient processing of OLAP queries- Meta Data Repository.

Unit V: Data Mining:Data mining Motivations-Data mining Primitives-Languages: Data Cleaning Data Integration-Data Transformation-Data Reduction-Data Discretization and Concept Hierarchy Generation-Techniques-Classification-Assoications-Regression-Clustering-Prediction-Data Mining Query Language-DM Issues-Data mining Applications.

Reference Books:

1. Jiawei Han & Micheline Kamber, " Data Mining Concepts and Techniques ", Harcourt India Private limited, First Indian Reprint, 2001.
2. Introduction to Parallel Computing, 2nd Edition, by Anshul Gupta, Ananth Grama, George Karypis, Vipin kumar, 2003, Publisher Addision Wesley.
3. "Mobile Communication",Jochen Schiler, Addision Welsey,2000.
4. Efrem Mallach Decision support & data Warehouse System, McGraw Hill International Edition , 2000
5. Cloud Computing Concepts, Technology and Architecture by Thomas Ere-May 2013.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – VI

CC 8 – C# AND ASP .NET

Subject Code: 17U6CA8	Credits: 6	External Marks: 75	Hours: 6

Objectives: *This Syllabi Details Concepts, Techniques and Application pertaining to the Subject in a flexible style . This Syllabi discuss several illustrative problems to reinforce the understanding of the Theory*

Unit I: Introduction: C# Language- CLR-base Class Library . C# Language Reference : Identifier –Types –Variable – Expression and Operation –Statement – Inheritance –Access Modifiers –Classes and Structs - Interface – Arrays – Enum –Delegates – Events –try Statement and Exception –Attributes . Programming the .Net Framework : Common Types – Math- String – Collection – regular Expression – Threading .

Unit II: Base Class Library Overview : Core Types –Text – Collection – Stream I/O – Networking – Security – Reflection – Serialization – Remoting - Web Services – Data Access – XML –Graphics – Rich Client Applications – Web –based Applications – Globalization – Configuration – Advanced Computer services – Assemblies – Diagnostics and Debugging – Components and Tool Support

Unit III : Developing ASP.Net Applications: ASP.Net Application –ASP.Net File Types – The bin Directory – Application Updates – A simple Application from Start to Finish – code behind – web form Inheritance Explained – Compiled Code behind Files – Compiled Multiple Files into one Assembly – The Global. asax Code Behind – Application Events – Understanding ASP.Net Classes

Unit IV : Web Form Fundamentals : Server Controls – HTML Server Controls – Viewstate –The HTML Control Classes – Events – HTML Control Classes – The Page Classes – Assessing HTML Server Controls – Web Controls : The Basic Web Control Classes – The web Control Tag – The Web Control Classes : Units – Enumerated Values – Colors – Fonts – List Controls – AutoPostBack and Web Control Events .

Unit V: VS.Net : The Web Form Designer – Writing Code . Validation and Rich Controls - The Calendar Controls – The Adrotator – Validation . overview of ADO.Net : introduction – Characteristics of ADO.Net – The ADO.Net object Model . ADO.Net Data Access : SQL Basics – SQL Select Statement - Creating Connection – Command with Datareader – Updating a Data – Accessing Disconnected Data – Multiple Tables –Updating Disconnected Access.

Text Book:

(1) C# Essentials – Ben Albahari , Peter Drayton & Brand Merrill Shroff Publishers & Distributors PVT.Ltd
(2) The Complete Reference ASP.Net – Matthew Donald Tata McGraw- Hill Publishing Company Limited

Reference Book:

1. C# and .Net framework – N.Manjula & S.Suresh – Charulatha Publication

SEMESTER – VI

CC 9 – OPERATING SYSTEMS

Subject Code: 17U6CA9	Credits: 6	External Marks: 75	Hours: 6

Objectives:

- *To be aware of the evolution and fundamental principles of operating system, processes and their communication.*
- *To understand the various operating system components like process management, memory management and*
- *To know about file management and the distributed file system concepts in operating systems*

Unit I: **Introduction:** what is an operating system?- system components – Os services – System Calls- System Programs – System Structure: Simple Structure - Layered Approach - Virtual Machines – System Design and Implementation: Design Goals.

Unit II: **Process Management:** Process Concept – Process Scheduling – CPU Scheduling: Basic concept – Scheduling Criteria – Scheduling Algorithms – Process Synchronization: The Critical Section problem – Semaphores – Deadlock: Deadlock Characterization – Deadlock Prevention – Deadlock avoidance – Detection.

Unit III: **Storage Management:** Swapping – Contiguous Memory management – Paging Memory Management – Segmentation – Segmentation With Paging – Demand Paging – Page Replacement: Basic Scheme – Various Replacement Algorithms-Thrashing.

Unit IV: **I/O Systems:** I/O Hardware – Polling- Direct Memory Access – I/O Interrupt – Application I/O Interface – Kernal I/O Subsystem: I/O Scheduling – Buffering – Caching - Spooling.

Unit V: **OS Security:** The Security Problems – User Authentication – Program Threads – System Threads – Securing Systems and Facilities – Intrusion Detection .

Text Book:

OPERATING SYSTEM CONCEPTS – Silberschatz, Galving, Gangne, sixth edition. Publication Wiley India.

Reference Book:

1) System Programming and Operating System – D.M Dhamdhere, Tata

McGraw Hill publishing.

2) Dental H.M "Introduction to OS" Addison Wesley Publishing Co, 1998

SEMESTER – VI

CP 6 – LAB - VI .NET

Subject Code: 17U6CAP6	Credits: 4	External Marks: 60	Hours: 5

1. Design ASP.Net web form using Html Server Controls to enter job seeker's details.

2. Create an ASP.Net web form using Web control to enter E-Mail registration form.

3. Apply appropriate validation techniques in E-Mail registration form using validation controls.

4. Write an ASP.Net application to retrieve form data and display it the client browser in a table format.

5. Create a web application using ADO.Net that uses which performs basic data manipulations:

   (i). Insertion (ii) Updating (iii) Deletion (iv) Selection

     Hint: Do operations using Ms-Access and SQL-Server

6. Create an application using Data grid control to access information's from table in SQL server.

7. Create an application using Data list control to access information's from table in SQL server and display the result in neat format.

8. Case Studies (Must include basic database operations such as Insertion, Deletion, Modication, Selection and Searching)

9. Job Search Portal.

10. College Portal.

11. Company Portal.

SEMESTER – VI

EC 2 – E-COMMERCE

Subject Code: 17U6CAEC2	Credits: 4	External Marks: 75	Hours: 6

Objectives: *To promote and encourage use of computers and e-commerce in mentioned areas by means of training and development. To provide Consultancy in fields of using facilities and expertise of the Institute*

Unit I: Electronic Commerce - Electronic Data Interchange – Benefits of EDI – Value Added Networks –Electronic Commerce over the Internet – Internet Commerce Examples – CommerceNet - Electronic Mail : Introduction - Computer communication System - ISO open System Interconnection Model – Internet Mail – Internet Address – SMTP – Domain Naming System.

Unit II: Electronic Communication : PCs and Networking – Networking Topologies – Communication Media-VSAT (Very Small Aperture Terminal) – Access Schemes – VSAT Network Components . Internet : Introduction – Internet Communication protocols – Internet Services and resources – Internet Mail – Internet Search – Concern about Internet.

Unit III: EDI (Electronic Data Interchange) : Introduction – Cost and Benefits . Components of EDI Systems: EDI Standard – EDI Software – Communication of EDI message - Notification. EDI Implementation Issues : EDI Service Bureaus – Standalone Electronic Data Interchange – Integrated Electronic Data Interchange .

Unit IV: Internet and Extranets for E-Commerce – Ecommerce – Commerce Over Internet : EDI over the internet –FTP based messaging for EDI – Mailing List for EDI – Web Based Commerce – Commerce Over Extranets. E-Commerce in India : EDI in India – Internet in India- Laws for E-commerce in India.

Unit V: Concerns for E-commerce Growth: Internet Bandwidth and Technology Issues – Bandwidth Issues –Technology Issues for Internet – ATM Technology – Fibre Optic Networks –High Capacity Storage Systems. Security Issues : Security Concerns- Security Solutions – protocols for Secure Messaging – Public key Certificates- Electronic cash over Internet.

Text Book:

E-COMMERCE , The Cutting Edge of Business, Tata McGraw-Hill Publishing Company Limited, New Delhi. Kamlesh K Bajaj , Debjani Nag

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

B.C.A. (COMPUTER APPLICATIONS)

(Effective for those admitted from 2017-2018 onwards)

SEMESTER – VI

EC 2 – MIS

Subject Code: 17U6CAEC2	Credits: 4	External Marks: 75	Hours: 6

Unit I: **INTRODUCTION TO BUSINESS SYSTEMS IN BUSINESS**
Need for IS in Business – fundamentals of IS – System concepts – Components of IS – IS resources Activities – Overview of IS – Operation Support Systems, Management Support Systems, Other Classification – System approach to Problem solving – Global business scenario – trends in technology and applications.

Unit II: **INFORMATION SYSTEMS FOR BUSINESS OPERATIONS :**
Business Information Systems – Marketing Information Systems – Manufacturing – Information Systems – Human Resource Information Systems – Accounting Information Systems, Financial Information Systems – Transaction Processing System.

Unit III: **INFORMATION SYSTEMS FOR MANAGERIAL DECISION SUPPORT**
Management Information & Decision Support Systems – Management Information Systems – Expert Systems – Examples, Executive Information Systems – Artificial Intelligence Technologies.

Unit IV: **INFORMATION SYSTEMS FOR STRATEGIC ADVANTAGE :**
Strategic roles of IS-Breaking Business Barriers – Reengineering Business Processes Improving Business Quality – Creating Virtual Company – Building knowledge Creating Company – Using Internet Strategically – Challenges of Strategic IS – Enterprise – wide systems and E-Business applications.

Unit V: **MANAGING INFORMATION SYSTEMS :**
Enterprise Management – Information Resource Management – Strategic Management, Operational Management – Resource Management Technology Management – Distributed Management. Organizing Planning – IS planning methodologies – Critical Success Factors – Business Systems Planning – Computer Aided Planning Tools. Security & Ethical Challenges; IS controls – Facility Controls – Procedural Controls – Computer Crime – Privacy Issues.

Recommended Text books:
1. Information Systems Today, By Leonard Jessup and Joseph VALACICH INDIAN Edition, PHI learning PVT Ltd.,
2. Management Information system, By EFF OZ, Indian Edition, Cengage learning.
3. Management of Information systems by S.A. Kelkar, PHI learning PVT Ltd.,
4. Management Information systems Indian Edition, Gordon B. Davis and Margrethe H. Olson, Tata Mcgraw Hill.
5. Introduction to Information Systems by Alexis Leon and Mathews Leon Tata Mcgrawhill Co.

Suggested Readings:
1. Management Information Systems S. Sadagopan, PHI learning PVT Ltd.,
2. Management of Information Systems By Waman S. Jawadekar Tata Mcgraw Hill.
3. Management Information System – The Managers view Indian Edition By ROBERT Schultheis and Mary Summer Tata Mcgraw Hill.
4. Principles of Information Systems By RALPH Stair and George Reynolds, Cengage Learning.

B.C.A. (COMPUTER APPLICATIONS)
(Effective for those admitted from 2017-2018 onwards)

SEMESTER – VI

EC 2 – ERP

Subject Code: 17U6CAEC2	Credits: 4	External Marks: 75	Hours: 6

Objectives:
- o *To understand the business process of an enterprise*
- o *To grasp the activities of erp project management cycle*
- o *To understand the emerging trends in erp developments*

Unit I: **INTRODUCTION**
Overview of enterprise systems – Evolution - Risks and benefits - Fundamental technology – Issues to be consider in planning design and implementation of cross functional integrated ERP systems.

Unit II: **ERP SOLUTIONS AND FUNCTIONAL MODULES**
Overview of ERP software solutions- Small, medium and large enterprise vendor solutions, BPR, and best business practices - Business process Management, Functional modules.

Unit III: **ERP IMPLEMENTATION**
Planning Evaluation and selection of ERP systems - Implementation life cycle – ERP implementation, Methodology and Frame work- Training – Data Migration. People Organization in implementation-Consultants, Vendors and Employees.

Unit IV: **POST IMPLEMENTATION**
Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of ERP Implementation.

Unit V: **EMERGING TRENDS ON ERP**
Extended ERP systems and ERP add-ons -CRM, SCM, Business analytics - Future trends in ERP systems-web enabled, Wireless technologies, cloud computing.

Text Book:
   1. Alexis Leon, ERP demystified, second Edition Tata McGraw-Hill, 2008.

References:
   1. Sinha P. Magal and Jeffery Word, Essentials of Business Process and Information System, Wiley India, 2012
   2. Jagan Nathan Vaman, ERP in Practice, Tata McGraw-Hill, 2008
   3. Alexis Leon, Enterprise Resource Planning, second edition, Tata McGraw-Hill, 2008.
   4. Mahadeo Jaiswal and Ganesh Vanapalli, ERP Macmillan India, 2009
   5. Vinod Kumar Grag and N.K. Venkitakrishnan, ERP- Concepts and Practice, Prentice Hall of India, 2006.
   6. Summer, ERP, Pearson Education, 2008

SEMESTER – VI

EC 3 – WEB DESIGN

Subject Code: 17U6CAEC3	Credits: 4	External Marks: 75	Hours: 6

Objectives: *To develop the skill & knowledge of wed page design. Student will understand the knowhow and can function either as an entrepreneur or can take up jobs in the multimedia and web site development studio and other information technology sectors.*

Unit I: **Fundamentals**: A Brief Introduction to the Internet-The World Wide Web-Web Browser-Web Servers-Uniform Resource Locators-Multiple Internet Mail Extensions-The Hypertext Transfer Protocol-The Web Programmers Tool Box.

Unit II: **Introduction to HTML**: Designing a Home Page-HTML Document-Anchor Tag-Hyperlinks-Head and Body Sections-Header Section-Title-Prologue-Links-Colorful pages-Comments-Body Section-Heading-Horizontal Ruler-Pragraph-Tabs-Images and pictures-Lists and their Types-Nested Lists-Table Handling.

Unit III: **Introduction to Cascading Style Sheets**-Concept of CSS-Creating Style Sheet-CSS Properties-CSS Styling (Background,Text Format,Controlling fonts)-Working with block elements and onjects-Working with Lists and Tables-CSS Id and Class-Box Model (Introduction, Border Properties,Padding Properties,Margin Properties)-CSS Advanced (Grouping, Dimension,Display,Positioning)-CSS Color-Creating PageLayout and Site Designs.

Unit IV: **Introduction to ASP**-ASP File-The Process of serving an Active Server Page-Retrieving from Data-Using TextBoxes and Text Areas-Cookies-Working with Cookies -Application of Cokkies-using Cookies in ASP application.

Unit V: **Introduction to XML-**Introduction – The Syntax of XML-XML Document Structure-Document Type Definitions-Namespaces-XML Schemas-Displaying Raw XML Documents-Displaying XML Documents with CSS-XML Processors.

Text Books:

1. Programming the World Wide Web, Robert.W.Sebesta, Pearson

   Education, Third Edition, 2007.

2. Special Edition Using Active Server Pages –Scot Johnson, Prentice Hall of India

   Private Limited 2001.

Reference Books:

Web Design-A Beginners Guide,Wendy Willard,Tata McGraw Hill

SEMESTER – VI

EC 3 – LINUX ADMINISTRATION

Subject Code: 17U6CAEC3	Credits: 4	External Marks: 75	Hours: 6

Unit I: Linux Introduction and Installation: Linux-Advantages-Red Hat Linux-New Features-Installation procedures and Methods. Using Desktop-GNOME-KDE-Linux Commands Accessing and Running Applications

Unit II: Installing Red Hat Linux Applications, Running Window Application, Running Window,DOS and Macintosh Applications –Tools for using Internet and Web.

Unit III: Administration: Understanding System Administration: Root login-super user-GUI tools,commands and Log files-Configuring Hardware-File System and Disk Management- Monitoring performances.

Unit IV: Setting Up and Supporting users: Creating user accounts – Setting user defaults –Creating Desktops-Modifying and Deleting Accounts.

Unit V: Security Issues: Hacker versus Cracker-Password Protection- Protection from break-in-Filtering Network Access-Firewalls-Detecting Instructions – Encryption techniques

Text Book:

1. Christopher Negus "Red Hat Linux 9 Bible", WILEY- Dreamtech India Pvt.Ltd, New Delhi, First Edition, 2003

Reference Book:

1. Thomas Schenk, "Red Hat Linux System Administration", Techmedia, New Delhi,2003.

SEMESTER – VI

EC 3 – WINDOWS PROGRAMMING

Subject Code: 17U6CAEC3	Credits: 4	External Marks: 75	Hours: 6

Objectives: *Introduces the basic concepts of Windows Programming. Course Outline*

Unit I: Introduction to C# - Variables, Operators, and Expression – methods and Applying Scope- Decision Statements- Compound Assignment and iteration Statements Managing Errors and Exceptions.

Unit II: Creating and Managing Classes and Objects – Values and References – Value Types with Enumerations and Structures – Arrays and Collections – Parameter Arrays – Working with Inheritance – Interfaces and Abstract Classes – Garbage Collection and Resource Management.

Unit III: Creating Components – Implementing properties to Access Fields – Using Indexers – Interrupting Program Flow and handling Events – Generics – Enumerating Collections – querying In-memory Data by Using Query Expressions – Operator Overloading

Unit IV: Introduction to Windows Presentation Foundation – Menus and Dialog Boxes – Performing Validation.

Unit V: Managing Data – Querying a Database by using ADO.NET –Querying a Database by using DLINQ Displaying and Editing Data by using Data Binding.

Text Book:

1. J. Sharp, 2009, Microsoft Visual C# 2008 Step by Step, PHI Learning Private

   Limited

Reference Books:

1. P. Sestoft and H. I. Hansen, 2004, C# precisely, 2009, PHI Learning Private

   Limited.

2. B. Ramakrishna Rao, 2006, Programming with C#: Concepts and Practice,

   PHI Learning Private Limited Website and e-Learning Source

B.C.A.,

(Effective for those admitted from 2017-2018 onwards)

SEMESTER - III

AC 3 - PRINCIPLES OF ACCOUNTANCY

Subject Code: 17U3CACO1	Credits: 4	External Marks: 75	Hours: 6

Unit I: Meaning and definition of Accounting – Objectives – Attributes – Functions – Distinction between Bookkeeping and Accounting – Importance – Advantages –basic accounting terms.

Unit II: Fundamental Concept of Accounting – Basic Concepts and conventions – modified Principles – Types – Meaning of double entry system – Basic Accounting (Golden) rules.

Unit III: Meaning of Journal – preparation of journal entries – Meaning of Ledger – preparation of ledger – Distinction between Journal and Ledger – Preparation of Trial balance.

Unit IV: Subsidiary Books: Meaning and characteristics of Single Column Cash Book – Meaning and characteristics of Double Column Cash Book – Meaning and characteristics of Petty Cash Book.

Unit V: Final Accounts of sole Traders: Preparation of Trading Account, Profit and Loss Account and Balance Sheet (Simple adjustments only).

(Closing stock, outstanding expenses, prepaid expenses and Deprecation)

(THEORY AND PROBLEMS SHALL BE IN THE RATIO OF 60:40 RESPECTIVELY)

BOOKS RECOMMENDED:

1. PRINCIPLES OF ACCOUNTING   : S.P. JAIN , K.L. NARANG
2. ADVANCED ACCOUNTANCY   : T.S. REDDY, A. MURTHY
3. ADVANCED ACCOUNTANCY   : M.C. SHUKALA, T.S.GREWEL & S.C. GUPTA

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

B.C.A.,

(Effective for those admitted from 2017-2018 onwards)

SEMESTER - IV

AC 4 - ORGANISATIONAL BEHAVIOUR

Subject Code: 17U4CACO2	Credits: 4	External Marks: 75	Hours: 5

Unit I: **Organisational Behaviour:** Meaning, Nature, Objectives and Importance of Organisational Behaviour – Key elements of Organisational Behaviour – Need for studying Organisational Behaviour.

Unit II: **Individual Behaviour:** Individual differences – Factors influencing individual behaviour.

Learning: Meaning – Definitions – Characteristics of Learning – Factors determining learning.

Unit III: **Personality:** Meaning and Definition – Factors determining personality – personality factors influencing individual behaviour – Frued's approach to personality development – Erickson's approach to personality development.

Unit IV: **Perception:** Definition – Factors – Process of Perception – Qualities of perceiver – Qualities of perceived.

Unit V: **Attitudes:** Meaning & Definition - Characteristics – Factors influencing the formation of attitude – Measurement of attitude.

Values: Meaning and definition – similarity between values and attitude - Differences between attitude and values – Classification of values – factors influencing the formation of values.

BOOKS RECOMMENDED

1. ORGANISATIONAL BEHAVIOUR : L.M. PRASAD
2. ORGANISATIONAL BEHAVIOUR : S.S. KHANKA
3. ORGANISTAIONAL BEHAVIOUR : J.S. CHANDAN
4. ORGANISATIONAL BEHAVIOUR : J.JAYASANKAR