B.C.A. (Computer Applications)
Restructured CBCS curriculum with
Effective from June, 2016

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	16UCA6PJ01	PROJECT
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16UCA1MC01 WEB DESIGNING

Semester: I **Credits: 3**

Category: MC **No. of.Hrs/week: 5**

Objectives:

1. To impart knowledge in designing web pages with text and images.
2. To validate and perform actions on web pages through scripting languages.
3. To learn and implement XML Concepts.

UNIT I [17 Hrs]

Overview of HTML5: Fundamentals of HTML–Working with text in HTML- Organizing Text in HTML-Lists- Working with Links and URLs-Creating Tables-Working with Images-Colors and Canvas-Working with HTML Forms-Interactive Elements.

UNIT II [16Hrs]

Dynamic HTML: Overview of CSS-Backgrounds and Color Gradients in CSS- Font and Text Styles-Creating Boxes and Columns using CSS-Displaying ,Positioning and Floating an Element-List Styles-Table Layouts.

UNIT III [15 Hrs]

JavaScript: Introduction to scripting –operators: logical-Increment and decrement operators –Control structures-Arrays: Declaring arrays -sorting arrays-Functions-Object: Math object-string Object-Date object-Boolean object and Numberobject-Dialog Boxes--Validation

UNIT IV [14 Hrs]

XML Overview-Working with basics of XML--HTML XML –Processing instructions-Applications of XMLCOMMENTS-XML Namespaces-XML Schema-Style sheets: Cascading style sheets (CSS).

UNIT V [13 Hrs]

Extensible Style Language Transformations (XSL)-Defining Document Type Definition Entities (DTD)-Working with attributes-Document object model (DOM) -DOM methods-SAX parser.

TEXT BOOKS:

1. Kogent Learning Solutions Inc,"Html5 Black Book: Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP and jQuery", Dreamtech Press, 2011.
2. Ivan Bayross, "Web Enabled Commercial Application Development Using HTML, DHTML Java Script, Perl CGI", BPB Publications, New Delhi, 3rd Edition, 2005.
3. Heather Williamson, "XML: The Complete reference", Tata McGraw Hill Pub, 2001.

REFERENCE BOOKS:

1. Paul J. Deitel, Harvey Deitel, Abbey Deitel, Internet and World Wide Web How to Program , Edition 5, 2011.
2. Deitel, Nieto, Lin, Sadhu, "XML HOW TO PROGRAM" Pearson Education, 2005.

16UCA1MC02 WEB DESIGNING LAB

Semester: I **Credits:**
Category: MC **No. ofHrs/week: 4**

Objectives:

1. To design websites using HTML5.
2. To create interactive forms through JavaScript.
3. To efficiently analyze and develop applications on XML.

List of Excercises:

1. To design Biodata using basic HTML tags.

2. Create application form using various text formats.
3. Linking documents.
4. Creation of hyperlinks and images as hyperlinks in HTML.
5. Creation of Lists in HTML.
6. Create Time Table preparation using table in HTML.
7. Create LOYOLA COLLEGE website using HTML .
8. Targetting the named frame in HTML.
9. Internal CSS with the style elements.
10. Inline CSS with style elements
11. External CSS with style elements.
12. Create Calculator using Java script.
13. Create Login Form using arrays in Java Script.
14. Functions in JavaScript.
15. Dialog boxes using Java script.
16. Create Objects using Java script.
17. To Validate websites, interactive forms through JavaScript.
18. Create Employee details using schemas.
19. Create our department details apply CSS
20. Create Internal and External DTD which contains student information using XML.
21. Create Payroll system using XSL.
22. Food Menu with CSS
23. CD Catalogue with XSL.

16UCS1AL01 OPERATIONS RESEARCH

Semester: I **Credits: 3**

Category: AL **No. of Hrs/week: 6 Hrs**

Objectives:

1. To design and control complex systems and to solve hard problems.
2. To learn optimization in management problems.
3. To learn decision making in real time problems.

UNIT-I **18Hrs**

Introduction to Operations research: Basic definition, Scope, objectives, Phases, models and limitations of Operations research Linear Programming: Formulation of LPP – Graphical solution of LPP and simplex method.

UNIT-II **18Hrs**

Transportation problems-unbalanced Transportation problem-Finding basic feasible solution – North-west corner rule-least cost -Vogel's approximation method. Assignment Problems – Hungarian method for optimal solution-Traveling Salesman Problem.

UNIT-III **18Hrs**

Sequencing and scheduling problems: Job sequencing-n-jobs through two machines, N- jobs through three machines, two jobs through m machines. Maintenance and replacement problems: Models for routine maintenance and preventive maintenance decision – Replacement models that deteriorate with time and those fail completely.

UNIT-IV **18Hrs**

PERT and CPM techniques – Network-activity, node-dummy activity-Fulkerson rule-Constructing the network - Critical path analysis – Three time estimates for PERT.

UNIT-V **18Hrs**

Inventory problems: Deterministic model – costs – decision variables – Economic order quality – Instantaneous receipt of goods with and without shortage – Inventory systems – Safety stock – Reorder – Level (ROL), Reorder point (ROP)

TEXT BOOK:

1. Iyer,P.Sankara,"Operations Research",TataMcgGraw-Hill,2008.
2. Gupta, P.K. and Hira, D.S., Operations Research, S. chand& sons, 2000

3. http://www.math.epn.edu.ec/~sandra/TDE2015_A/libros/taha2007.pdf

REFERENCE BOOKS:

Kalavathy.S,"Operations Research",Vikaspublication,fourth edition.

Taha. H.A, "Operations research – an introduction".Pearson Prentice Hall, Eighth editions

16UCA2MC01 PROGRAMMING TECHNIQUES

Semester: II **Credits:**

Category: MC **No. of Hrs/week:5**

Objectives:

1. To understand the basics of Procedure and Object oriented programming techniques.
2. To learn the features of C programming and apply in problem solving.
3. To create and use objects for developing OOPs concepts in C++ programming.

UNIT I (12hrs)

Basic concepts of Procedure and Object oriented programming –Structured programming with C: Fundamentals: Character set – Identifiers and keywords – Data types – typedef – Constants - Operators and Expressions - Basic Input-Output - Control structures : if ,if-else, switch case, while, do-while, for statements – Nested control structure – Break and continue statements. Arrays: Definition of array – One dimensional, two dimensional arrays and multi dimensional arrays -Initialization and Processing of arrays.

UNIT II (9hrs)

Strings: Declaration and Initialization of strings –Reading and Writing Strings - Standard string functions. Functions: Introduction – User defined and library functions – function parameters – Return values – Recursive functions - Pointers and functions. Storage class - Automatic, External, Static and Register variables.

UNIT III (15hrs)

Structure: Declaring and using structures – structure initialization - Structure within a structure – Array ofStructures – Union - Bit fields - Enumerated data type – Command line Arguments. Files: Introduction – File handling functions – File types - Opening and closing a data file – Reading and writing Operations on files.

UNIT IV (12hrs)

Principles of Object Oriented Programming: Procedure Oriented Programming – OOP Paradigm- Basic concepts of OOP-Benefits of OOP-Object Oriented Language Applications of OOP. Beginning with C++, Tokens, Expressions and Control Structure. Functions in C++: Introduction-Main function prototyping- call by, return by reference-inline functions-default, constant arguments-Function overloading-friend and virtual functions.

UNIT V (12hrs)

Classes and Objects - Constructors and Destructors. Constructors-Parameterized, Multiple Constructors- dynamic constructors and destructors- Operator overloading and Type Conversions, Inheritance: Extending classes. Pointers, virtual functions and polymorphism. Managing console I/O Operations: C++ streams-C++ stream classes-Unformatted I/O Operations- Formatted console I/O Operations, Working with files: classes for file stream operations-opening and closing a file-EOF-File modes-File pointers-sequential I/O Operations. Templates, Exception Handling.

TEXT BOOK:

1. K.R.Venugopal, S.R.Prasad, "Mastering C", Tata McGraw Hill, 2006.
2. E. Balagurusamy, Object-Oriented Programming with C++, Tata McGraw-Hill Education, 2008

REFERENCE BOOKS:

1. Ashok N. Kamthane, Programming with ANSI and Turbo C , Seventh Impression, 2009.
2. E. Balagurusamy, Programming in Ansi C, IV Edition, Tata McGraw-Hill, New Delhi.
3. Bjarne Stroustrub, Programming principles and practice using C++, Addison Wesley, Second Edition.

16UCA2MC02 PROGRAMMING TECHNIQUES LAB

Semester: II **Credits: 1**

Category: MC **No. ofHrs/week:4**

Objectives:

1. To Solve problems through C language.
2. To acquire skills in C++ programming with object oriented concepts,
3. To apply file concepts in programming.

C Program List:

1. Arithmetic Expressions with Formatted Input/Output.
2. Decision Making and Loop statements.
3. Enumerated data type.
4. Arrays (1-D, 2-D)
5. String Operations
6. Pointers
7. Library and User Defined Functions

8. Simple Structures

9.Structures with Pointers

10File operations (Read and Write)

C++ Program List:

11. Call by reference and Return by reference

12. Inline and Friend functions.

13. Function overloading

14. Operator overloading

15. Inheritance

16. Sum of two complex number using constructor.

17. Virtual functions

18. Generate Fibonacci series using class.

19. Read and display the "Employee information" using class.

20. String type class and implement the string operations

21. Formatted and Unformatted I/O operations

22. Working with File Stream Classes

16UCS2AL01 ENTERPRISE RESOURCE PLANNING

Semester: II **Credits: 3**

Category: AL **No. of Hrs/week: 6 Hrs**

Objectives:

1. In this course students shall learn various components of application software that helps to computerize functioning of an enterprise.

UNIT - I: 15hrs

Introduction to ERP – Conceptual model of ERP – Evolution of ERP-Structure of ERP-Reasons for Growth-Advantages of

ERP-Enterprise: An overview .ERP and related technologies: Business Process Re-engineering – Management Information System – Decision Support System – Executive Information system – Data Warehousing – Data Mining – OLAP – Supply Chain Management

UNIT- II: 18hrs

Benefits of ERP: Reduction of Lead Time – Reduction of Cycle Time – Improved Resource Utilization – Reduced Quality Costs – Increased Flexibility – Improved Information accuracy and Decision making capability

UNIT- III: 15hrs

ERP Implementation Lifecycle: Introduction – Per-evaluation screening – Project Planning – Gap Analysis – Reengineering – Configuration – Implementation – Testing – Training – Maintenance. Vendors, Consultants and Users: In-house Implementation-Pros and Cons – Vendors – Consultants – End-users.

UNIT- IV: 12hrs

Supply chains as Systems - Modeling the Supply Chain – Supply Chain Software - Meeting Demand – Maintaining Supply – Measuring Performance

UNIT - V: 12hrs

Forecasting Demand – Scheduling Supply – Improving performance – Mastering Demand – Designing the Chain – Maximizing Performance. Essentials of Customer relationship management – Designing CRM application - Various modules of CRM application - Advantages of CRM

TEXT BOOK:

2. Alexis Leon, “Enterprise Resource Planning “Tata McGraw – Hill Publishing Company Ltd,2004.
3. Taylor David,A supply chains(A manager guide),Pearson education,(Unit 3: Chapters 4, 5, 6, 7, 8, 9) (unit 4: Chapters 10, 11, 12, 13)

4. Tiwana, Essential guide to knowSledge management : The e-business and CRM applications, Pearson education (ISBN 81-780-8326-4)(unit 5)

REFERENCE BOOKS:

1. Rahul V. Altekar , "Enterprisewide Resource planning-Theory and practice", Prentice Hall of India Pvt Ltd
2. Vinod kumar garg and N.K.Venkitakrishnan," Enterprisewide Resource Prentice Hall of India Pvt Ltd
3. Dr.Subodh Kesharwani , " ERP systems – Application, Experiences & Upsurg ",Pragati prakathan publication – Meerut Balasubramanian, Enterprise Resource Planning

16UCA3MC01 PROGRAMMING IN JAVA

Semester: III **Credits: 4**

Category: MC **No. ofHrs/week: 4**

Objectives:

1. Understand the concept and underlying principles of Object-Oriented Programming
2. Understand how object-oriented concepts are incorporated into the Java programming language
3. Develop the ability to solve real-world problems through software development in high-level programming language like Java

UNIT I **10 Hrs**

C++ VsJAVA,JAVA and Internet and WWW, JAVA support systems, JAVA environment. JAVA program structure,Tokens, Statements, JAVA virtual machine, Constant & Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, TypeCasting. Operators : Arithmetic, Relational, Logical Assignments, Increment and Decrement, conditional, Bitwise, Special, Expressions & its evaluation. If statement, if...else... statement, Nesting of

if...else... statements, else...if Ladder, Switch, ? operators, Loops -While, Do, For, Jumps in Loops, Labeled Loops.

UNIT II 10 Hrs

Defining a Class,Adding Variables and Methods, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods. Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Classes, Visibility Control.

UNIT III 12 Hrs

Arrays: One Dimensional& two Dimensional, strings, Vectors, wrapper Classes, Defining Interface Extending Interface, Implementing Interface, Accessing Interface Variable, System Packages, Using system Package, Adding a Class to a Package, Hiding Classes.

UNIT IV 14 Hrs

Creating Threads, Extending the Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface.

UNIT V 14 Hrs

Local and Remote Applets Vs Applications, Writing Applets, Applets Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User.

TEXT BOOK:

1. E. Balaguruswamy, “Programming In Java”, 4th Edition, TMHPublications,2010.

REFERENCE BOOKS:

1. James Gosling, Bill Joy, Guy Steele, "The JAVA Language Specification, Java SE 8",
2. Addison-Wesley Publication, 2015.
3. Raymond Gallardo, Scott Hommel, SowmyaKannan, Joni Gordon, and Sharon BioccaZakhour, "The Java Tutorials"6thEdition, Addison-Wesley Publication2015.

16UCA3MC02 PROGRAMMING IN JAVA - LAB

Semester: III **Credits: 4**

Category: MC **No. ofHrs/week: 4**

Objectives:

1. To understand how object-oriented concepts are incorporated into the Java programming language
2. To develop a problem-solving and programming skills using OOP concept
3. To develop an efficient Java applet and applications using OOP concept

JAVA PROGRAM LIST

1. Sum and average of N numbers
2. Test the Prime number
3. To calculate simple interest
4. Finding out the G.C.D of the number
5. To find the factorial of a number using Recursion
6. Illustrate the method overriding in JAVA
7. Write a program that declares a class, object and also to access the data member of its class
8. To design a class using abstract Methods and classes
9. Write a program to demonstrate the overloading & constructor
10. Write a program to demonstrate the single inheritance.

11. To design a string class that perform String Method
12. To handle the exception using try and multiple catch block
13. Program to implement the Nested try statements
14. Program to implement exception handling
15. To create a thread that implement the runnable interface
16. Write an applet that accepts two numbers from the user and display all the numbers between them.
17. Drawing Rectangles, Ovals etc using Applet.
18. Infix to postfix expression.
19. Write a program to implement Depth First Search.
20. Write a program to implement Breadth First Search.
21. Binary search
22. Merge sort.

16UCA3MC02 DATA STRUCTURES

Semester: III **Credits: 4**

Category: MC **No. ofHrs/week: 4**

Objectives:

1. To demonstrate a familiarity with major algorithms and data structures.
2. To apply important algorithmic design paradigms and methods.
3. To synthesize efficient algorithms in problem solving situations.

UNIT I 10 Hrs

Introduction &Overview : Concept of data Structures,Data structure operations, Control Structures, Variables, Data types, String Processing , Arrays-Linear arrays, Representation of Linear arrays in Memory, Traversing Linear Arrays, Inserting

and Deleting, Multidimensional Arrays, Pointers, Pointer Arrays, Records- Record Structures

UNIT II 10 Hrs

Stacks- Array Representation of Stacks, Operations on stack, Insert , Delete, update, Arithmetic Expressions: Polish Notation- Reverse Polish notation, Evaluation of a postfix expression, Transforming infix expression into postfix, Recursion, Towers of Hanoi, Queues- Representation of Queues- operations on queues, Insert , Delete, update

UNIT III 14 Hrs

Linked List- Representation of Linked list in memory, Traversing a linked list, Searching, Insertion into a linked list, Insertion Algorithm, Deletion from a Linked List, Deletion Algorithms- Doubly Linked List, Insertion, Deletion.

UNIT IV 14 Hrs

Trees, Binary Trees, Representation of binary trees in memory, Traversing Binary Trees- Preorder, In order, Post order, Graphs, Multigraphs, Directed graphs, Sequential Representation of graphs, Adjacency matrix, path matrix, Traversing a graph, Breadth first search, Depth first search.

UNIT V 12 Hrs

1. Sorting – sorting Techniques- Insertion sort, Selection sort, Bubble sort, merge sort
2. Searching- searching Techniques- Linear search, Binary search.

TEXT BOOK:

1. Seymour Lipschutz, “Theory and Problems of data structures”Schaum’s Outline
2. Series,2009
3. NarasimhaKarumanchi, “Data Structures and Algorithms made easy” CareerMonk Publications, 2016.

REFERENCE BOOKS:

1. Seymour Lipschutz, "Data Structures with C", Schaum's Outline Series,2009.
2. Thomas H Corman,Charles E leiserson,RonaldL.Rivest,Clifford Stein, "Introduction to algorithms",3rd Edition 2009.

16UCO3AL03 BUSINESS ACCOUNTING

Semester: III **Credits : 3**

Category: Allied **Hrs/Week: 6**

Course Objectives:

1. To enable the students to prepare the financial statements of Individuals.
2. To inculcate the importance of ratio analysis.
3. To expose accounting treatment for estimation of cost to the students.
4. To familiarize students with the managerial applications of marginal costing and accounting application through computers.

Unit 1: Financial Accounting

Preparation of journal, Ledger, Trial balance and Final Account – Trading Account, Profit and Loss Account and Balance Sheet with Elementary Adjustments.

Unit 2: Ratio Analysis

Liquidity Ratios – Current Ratio, Liquid/quick Ratios – Leverage Ratios – Debt Equity Ratios, Proprietary Ratios, Turnover Ratios – Fixed Assets Turnover Ratio, Current Assets Turnover Ratio, Inventory Turnover Ratio, Working Capital Turnover Ratio, Debtors Turnover Ratio, Creditors Turnover Ratio.

Unit 3: Cost Estimation and Cost control

Classification of cost by elements – Computation of costs – computation of profit, Treatment of stock – Tenders and Quotations.

Unit 4: Marginal Costing

Marginal costing; meaning, advantages and limitations – Cost-Volume Profit Analysis – Break Even Analysis – Application of marginal costing in managerial decision making.

Unit 5: ERP in accounting

Basic accounting through Computers – Cash Book – Profit and Loss Accounts and Balance Sheet.

Course Text

R L Gupta & V K Gupta Financial Accounting, Tata McGraw Hill Publication, 2013.

Murthy &Gurusamy, Cost Accounting, Tata McGraw Hill Publication, 2012.

Course References

1. Maheswari S.N., Principles of Cost Accounting, Sultan Chand Publications, 2011.
2. Reddy T.S.&Hari Prasad Reddy Y., Cost & Management Accounting, Margham Publications, 2011.
3. T S Reddy & Murthy, Financial Accounting, Margam Publication, 2014.

16UCA4MC01 WEB TECHNOLOGY

UG **Offered to: BCA**

Semester: IV **Credits: 3**

Category: MC **No. of Hrs/week: 3**

Objectives:

1. To equip the students with basic programming skills in web programming.
2. To learn Web Designing using ASP.NET.
3. Guide to develop web applications using ASP.NET with Visual Basic.Net.

UNIT I [9 Hrs]

Introduction to .Net Framework and ASP.NET- Working with ASP.NET Server Controls - Types of Controls, the ASP.NET State Engine, Programming ASP.NET Web Pages-Data types.

UNIT II [8 Hrs]

Variables- Statements- Organizing code,Object Orientation Basics -Navigation:Navigation controls, Programmatic redirection –User Controls: Introduction to user controls, Adding Logic to your user controls.

UNIT III [9 Hrs]

Validating User Input: Gathering data from the user, processing data at the server, Introducing Data Bases: Different Kinds of Relational Databases, Retrieving and Manipulating Data with SQL, Creating your own tables.

UNIT IV [10 Hrs]

Displaying and updating data: Data Controls, Data Source and Data-bound Controls, Customizing the Appearance of the Data Controls, Updating and inserting data - Working with Data: Formatting Your Controls Using Styles.

UNIT V [9 Hrs]

Handling Events, Hand-Coding Data Access Code, Caching, - Introducing Security - Login Controls, Role Manager- Debugging: Exception Handling, The basics of Debugging, Tools support for debugging.

TEXT BOOK

1. Imar Spaanjaars, "BEGINNING ASP.NET 4: in C# and VB", Wiley Publishing, 2014.

REFERENCE BOOKS

2. Matthew MacDonald, "BEGINNING ASP.NET 4.5 in VB" APRESS , 2012.
3. Bill Evjen, Scott Hanselman, Devin Rader, "PROFESSIONAL ASP.NET 4 in C# and VB",WileyPublication, 2010.
4. Stephen Walther, "ASP.NET 4 UNLEASHED" Pearson ,2012.

16UCA4MC02 WEB TECHNOLOGY – LAB

Semester: IV **Credits: 3**

Category: MC **Hrs/week: 3**

Objectives:

1. To understand and practice VB.NET.
2. To understand and practice Designing Web page using ASP.NET.
3. To understand and practice web development techniques using VB.NET.
    1. Create simple web application using web controls.
    2. Design a web page to handle with array list.
    3. Validate user input using validation controls.
    4. Design a web page to manipulate files.
    5. Create an application for accessing a SQL Database by Using ADO.NET.

6. Query textbox and & display records by using SQL database.
7. Login page in ASP.Net.
8. Inserting record into a database & deleting record into a database.
9. Develop a web application to read the details of the selected country stored in XML database and display back to the user using web controls.
10. Web services to perform calculations.
11. Online Bus Ticketing Booking System.

16UCA4ES01 LINUX PROGRAMMING

Semester: IV **Credits: 4**

Category: MC **No. ofHrs/week: 6**

Objectives:

1. To familiarize students with the Linux environment.
2. To give a detailed overview of Linux Structure.
3. Provides the skills in Linux Shell Script.

UNIT I [10 Hrs]

Introduction to Linux, Shell Programming - Shell, Pipes and redirections, creating and executing shellscripts - Environment Variables - Parameter Variables-Shell syntax, Variables.

UNIT II [10 Hrs]

Conditions - Control structures - User defined Functions, Shell Commands- Arithmetic Expansion- Parameter Expansion - Linux file structure – Directories, Files and devices, Library functions.

UNIT III [9 Hrs]

Low level file access - standard I/O library-Formatted Input and Output- File and directory maintenance -Program arguments - Time and date - File locking.

UNIT IV [8 Hrs]

Inter Process Communication - Process and Signals - Pipe - Process pipes- Pipe call-Parent and child Process - Named pipes.

UNIT V [8 Hrs]

Client server using FIFO Semaphores - shared memory - Message queues - Sockets – Sockettypes - Creating sockets - Socket Communications.

TEXT BOOK

Matthew Neil, Stones Richard, "BEGINNING LINUX PROGRAMMING", Wiley publication, 4thEdition, Delhi,2011.

REFERENCE BOOKS

1. Masters Jon, Blum Richard, "Professional Linux Programming, Wiley Publications, Delhi, 2009.
2. Wall Kurt," LinuxProgrammingUnleashed", Sams publication, Delhi,2008.
3. Chris Jhonson,"PRO Bashprogramming: Scriptingthe Linux Shell", Apress, 2009.

LINUX PROGRAMMING - LAB

1. Write a shell script to list all of the directory files in a directory.
2. Write a shell program to simulate Linux command. Eg. Cat
3. Create a shell script to redirect your input to file.
4. Create a shell script to demonstrate control structures.
5. Write shell script to perform integer arithmetic operations.
6. Write a shell program to demonstrate user defined shell functions.
7. Write a shell script to find out whether the given number is prime number or not.

8. Write a shell script to check the given file is writable or not.
9. Write a C program to emulate Linux commands.
10. Write a C program to examine its arguments.
11. Write a C program to demonstrate processing files.
12. Write a C program to create new process.

16UCA4ES02 ANDROID PROGRAMMING -LAB

Semester: IV **Credits:4**

Category: ES **No. ofHrs/week: 3**

Objectives:

1. To provide the basics of Android Software Development tools
2. 2.To develop applications which works on mobile platform and deploy them to mobile devices.
3. To work with Audio, Video and Content types of files through Android.

UNIT I Hours - 18

Getting Started with Android Programming – Using Eclipse for Android Development – Using Android Emulator.

Exercises:

1. Practice the environment for Android – Eclipse and Emulator

UNIT II Hours - 18

Activities ,Fragments and Intents – Getting to know the Android User Interface.

Exercises:

2. Styles ,Themes And Progress Dialog
3. Linking Activities With Intent
4. Fragments : Adding Fragments Dynamically , Communication Between Fragments
5. Intent Filters

6. Adding Categories , Displaying Notifications On Status Bar
7. View Groups : Linear Layout , Absolute Layout , Table Layout , Relative Layout , Frame Layout , Scroll View , Action Bar
8. Creating User Interface Programmatically
9. Registering Events for Views

UNITIII Hours – 18

Designing User Interfaces with views – Displaying pictures and menus with Views .

Exercises :

1. Basic Views: Handling View Events, Text View, Buttons , Progress Bar View , Auto Complete Text View
2. Views : Picker View ,List View, Spinner View, Image View , Grind View , Web View
3. Specialized Fragments : List Fragment , Dialog FRAGMENT, Preference FragmentMenus with Views

Unit IV Hours- 18

Data Persistence – Working with Audio and Video – Content Providers.

Exercises :

1. Saving and loading user preferences.
2. Persisting Data to files
3. Creating and Using databases
4. Audio and Video
5. Sharing Data using Content providers

Unit V Hours- 18

Messaging – Developing Android Services – Publishing Android Applications.

Exercises :

1. SMS Messaging

2. Getting feedback after sending a message
3. Sending Email
4. Creating a Simple Service
5. Running repeated tasks using the timer class
6. Establishing communication between a service and activity

TEXT BOOK

Wei – Meng Lee, "Beginning Android 4 Application Development", Wiley India Edition,

2012.

REFERENCE BOOKS

1. OnurCinar, "Android Apps with Eclipse", Apress, Springer (India) Private Limited, 2012.
2. Reto Meier, "Professional Android 2 Application Development", Wiley India Edition, 2010.

WEB RESOURCES

1. http://devcloper.android.com/training/basics/firstapp/index.html
2. www.vogella.com/articles/Android/article.html
3. www.coreservlets.com/android-tutorial/
4. www.edumobile.org/android/category/android-beginner-tutorial

16UCO4AL02 MODERN MARKETING

Semester: IV **Credits : 3**

Category: Allied **Hours / Week: 6**

Course Objectives

1. To expose students to the importance of Marketing in the Business World.
2. To enable students to understand the elements of the Marketing Mix to the recent trend.

UNIT I: Marketing and the Marketing Process

Definition of Marketing and Marketing Management – Marketing Process – Marketing ManagementOrientation – Marketing Plan – Marketing Mix – Relationship Building – Customer Retention Strategies.

UNIT II: Consumer/ Business Market Segmentation

Marketing Environment – Managing Marketing Information– Market Segmentation –Targeting – Positioning Strategies.

UNIT III: Product and Pricing Strategies

Product, Services and Branding Strategies – Types of Products – Product Mix – New Product Development– Product Life Cycle Strategy, Pricing – Pricing Objectives - Kinds of Pricing – Factors Affecting Pricing –Pricing Strategies.

UNIT IV: Marketing Channel and Communication Strategies

Marketing Channels – Functions – Types – Event Management; Marketing Communication Mix – Communication Process – Steps in Developing Effective Marketing Communication – Setting Promotion Budget and Mix.

UNIT V: Digital Marketing

Marketing Intelligence – Social Media – Digital Media –Sight Engine Optimization – Search Engine Management.

Course Text:

Kotler Philip, Armstrong Gary, Agnihotri y. Prafulla, EhsanUlHaque, Principles of Marketing -A South Asian Perspective, 13th Edition, Pearson 2009.

Course References:

1. 1.Maheshwari P. Rajendra, Principles of Marketing, International Book House, 1st edition, 2012.
2. Armstrong Gary, Kotler Philip, Principles of Marketing, Prentice Hall, 2011.

16UCA5MC01 OPEN SOURCE TECHNOLOGY

Semester: V **Credits:4**

Category: MC **No. ofHrs/week: 4T+3P**

Objectives:

1. To understand about the basics of open source technology
2. To understand and develop skills in open source programming language.
3. To understand and develop applications using open source technology.

UNITI: INTRODUCTION Hrs:15

Introduction to Opensources – Need of Open Sources– Advantages of Open Sources– Application of Open Sources. Open source operating systems : LINUX : Introduction– General Overview –Kernel Mode and user mode–Process– Advanced Concepts– Scheduling–Personalities–Cloning– Signals–Development with Linux..

UNITII OPENSOURCEDATABASE Hrs:15

MySQL: Introduction– Setting up account– Starting, terminating and writing your own programs–Record selection Technology – Working with strings–Date and Time–Sorting Query Results– Generating Summary– Working with metadata– Using sequences–MySQL and Web.

UNITIII Open Source Programming Languages Hrs:15

PHP: Introduction–Programming in web environment– variables–constants – data types–operators–Statements – Functions –Arrays–OOP–String Manipulation and regular expression–File handling and data storage–PHP and SQL database – PHP and LDAP – PHP Connectivity–Sending and receiving E-mails–Debugging and error handling–Security– Templates.

UNIT IV PYTHON Hrs:15

Syntax and Style–Python Objects–Numbers–Sequences–Strings–Lists and Tuples–Dictionaries–ConditionalsandLoops–Files–InputandOutput–Errorsand Exceptions–Functions–Modules–Classes and OOP–Execution Environment.

UNITV PERL Hrs:15

Perl backgrounder–Perl overview –Perlparsing rules–Variables and Data– StatementsandControlstructures–Subroutines,Packages,andModules-Working with Files–Data Manipulation.

TEXT BOOKS:

1. 1.Remycard,Ericdumasandfrankmevel,"THELINUXKERNELBOOK",
2. Wileypublications,2006
3. 2.VikramVaswani, "HOW TO DO EVERYTHING WITH PHP AND MYSQL",
4. Tata-McGraw- hillpublishingcompanylimited,2006.
5. 3.Wesleyj.Chun,"COREPHYTHONPROGRAMMING",Prenticehall,2013
6. 4.Martinc.Brown,"PERL:THECOMPLETEREFERENCE",2ndedition,TataMcGraw-hillpublishingcompanylimited,indianreprint2009.

REFERENCE BOOKS:

1. .RasmusLerdorfAndLevinTatroe,"PROGRAMMINGPHP",O'Reilly,2012
2. .StevenHolzner,"PHP:THECOMPLETEREFERENCE",2ndEdition,TataMcGraw-HillPublishingCompanyLimited,IndianReprint2009.
3. Vikram Vaswani, "MYSQL: THE COMPLETE REFERENCE", 2nd Edition, TataMcGraw- Hill Publishing Company Limited, Indian Reprint2009.
4. PYTHON COOK BOOK O'Reilly media 2013

16UCA5MC02 OPEN SOURCE TECHNLOGY – LAB

1. Installation of Linux
2. Generating random number using shell script.
3.Changing file permissions using shell script
4. Executing basing commands using Linux
5. Executing text editing commands in Linux.
6. Installation of WAMP Server.
7. Designing a web page using PHP
8. Designing application using session and cookies
9.Designing application using session and cookies
10. Working with different types of array using PHP
11. Working with PHP forms
12. Executing DML and DDL commands using MySQL
13. Retrieving data from table using PHP
14. Inserting data into table using PHP
15. Create a feedback form using PHP and MySQL
16. Create an application for ONLINE TEST using PHP and MySQL
17. Designing an application using PYTHON
18.Designing an application using PERL

16UCA5MC03 OPERATING SYSTEM

Semester: V **Credits: 5**

Category: MC **No. ofHrs/week: 5**

Objectives:

1. The goal of this paper is to provide an introduction to the internal operation of the modern Operating Systems
2. To have a basic knowledge of processes, Scheduling concepts ,DeadLock and the memory management of the operating system.
3. To have a better understanding in Input and Output device structures and File system of the operating system.

UNIT I 12 Hrs

Introduction: OS Structure - Components - Services – system calls -Virtual Machines. Process Management: Introduction - Process - Process Scheduling – Operations on processes - Cooperating Process - Inter-process Communication.

UNIT II 12 Hrs

CPU Scheduling: CPU Schedulers - Scheduling Criteria - Scheduling Algorithms. Process Synchronization: Critical Section Problem – Semaphores. Deadlocks: Characterization - Methods for Handling Deadlocks - Deadlock Prevention - Avoidance - Detection - Recovery.

UNIT III 12 Hrs

Memory Management: Introduction - Dynamic Loading and Linking – Overlays - Logical and Physical Address Space – swapping - Contiguous Allocation - Internal and External Fragmentation. Non-Contiguous Allocation: Paging and Segmentation Schemes.

UNIT IV 12 Hrs

Virtual Memory: Demand Paging - Page Replacement - Page Replacement Algorithms - Thrashing. File System: Introduction - File Concepts - Access Methods - Directory Structures – Protection.

UNIT V12 Hrs

File System Structures - Allocation Methods - Free Space Management. I/O System: Introduction - I/O Hardware - Kernel I/O Subsystem - Disk Structure – Disk Scheduling.

Case study : The Linux System.

TEXT BOOK:

1. Silberschatz Abraham, Galvin Baer Peter and Gagne Greg, “Operating System Concepts”, Sixth Edition, John Wiley & Sons Pvt. Ltd, Reprint 2011.

REFERENCE BOOKS:

1. Tanenbaum S. Andrew, “Modern Operating Systems”, Third Edition, Prentice-Hall Inc, 2008
2. Stallings William, “Operating Systems”, Seventh Edition, Pearson Education, 2011.

E-BOOK:

1. Tanenbaum S. Andrew, “Modern Operating Systems”, Third Edition, Prentice-Hall Inc, 2007.

16UCA5MC04 OBJECT ORIENTED SOFTWARE ENGINEERING

Semester: V **Credits:5**

Category: MC **No. of Hrs/week: 4**

Objectives:

1. To understand the fundamentals of software engineering based on object oriented concept
2. To understand about object oriented analysis and design.
3. To apply the OOAD concepts in software engineering .

UNIT I [11 hrs]

Software EngineerinG - Software Engineering Process paradigms - Project management - Process and Project Metrics - Risk analysis - Software project scheduling - Analysis modeling.

UNITII [11 hrs]

Software design -Abstraction - Modularity - Cohesion and Coupling-user Interface design-code documentation – Code efficiency- Software Configuration Management.

UNIT III [12 hrs]

Software Quality : Software Quality Assurance - Quality metrics - Software Reliability - Software testing- Path testing – Control Structures testing - Black Box testing - Integration,Validation and system testing- Software Maintenance-Reverse Engineering and Reengineering.

UNIT IV [13 hrs]

Introduction: An Overview of Object Oriented Systems Development – Object Basics: Object orientedphilosophy-Objects-Attributes-Behavior and Methods-Encapsulation and Information Hiding-ClassHierarchy-Polymorphism-Object Relationships and Associations– ObjectOriented Systems Development Life Cycle- Object-Oriented Methodologies:

Rumbaugh Methodology – Booch Methodology – Jacobson Methodology – Patterns Frameworks

UNIT V [13 hrs]

Unified Approach – Unified Modeling –Language-Use Case-Class diagram-Interactive Diagram – Package Diagram – Collaboration Diagram – State Diagram –Activity Diagram. Object-Oriented Analysis: Identifying use cases- Use-Case Model-Developing the Effective Documentation - Analysis – Classification – Identifying Object relationships ,Attributes and Methods.

TEXT BOOKS:

1. Pressman. S. Roger., "Software Engineering A Practioners approach",Tata McgrawHill, 6th Edition, 2005
2. Bahrami Ali , "Object Oriented Systems Development",Tata McGraw Hill,1999

REFERENCE BOOKS:

1. Booch, Grady,Jacobson,Rumbaugh, "The Unified Modeling Language User Guide", Addision-Wesley, Pearson Education
2. Patrick W. Sheridan, Jean M. Sekula," Interactive UML Development using V.B.6",BPB Publication
3. Richard Fairley , Software Engineering – Design Reliability and Management Sommerville, Software Engineering, Pearson Education, 7th Edition

16UCA5ES01 SOFTWARE PROJECT MANAGEMENT

Semester: V **Credits: 4**

Category: ES2 **No. ofHrs/week: 6**

Objectives:

1. To outline the need for Software Project Management.
2. To highlight different techniques for software cost estimation
3. To understand the activity planning.

UNIT I: 15Hrs

Introduction to software project management: An Overview of Project Planning: Select Project-Identifying - Project scope and objectives – infrastructure - project products and Characteristics. Estimate efforts- Identify activity risks - Allocate resources.

UNIT II: 15Hrs

Project evaluation: Strategic Assessment- Technical Assessment-cost-benefit analysis-Cash flow forecasting-cost-benefit evaluation techniques. Risk management: Nature of Risk- Managing Risk-Risk Identification and Analysis-Reducing the Risk.

UNIT III: 15Hrs

Software effort estimation: Problems with over and under estimations- Basis of software Estimation-Software estimation techniques- expert Judgment- Estimating by analogy. Activity planning: Project schedules, projects and activities, sequencing and scheduling Activities, networks planning models, formulating a network model.

UNIT IV: 15Hrs

Resource allocation: Scheduling resources-Critical Paths -Cost scheduling. Monitoring and Control: Creating Framework-cost monitoring- prioritizing monitoring.

UNIT V: 15Hrs

Software Quality: defining software quality- ISO9126, External Standards-Comparison of project management software's: dot Project, Launch pad, openProj.

TEXT BOOK:

1. Bob Hughes & Mike Cotterell, "Software Project Management", Fifth Edition, Tata McGraw- Hill Publications, 2012.

REFERENCE BOOKS:

1. S. A. Kelkar," Software Project Management" PHI, New Delhi, Third Edition, 2013.
2. Futrell , "Quality Software Project Management", Pearson Education India, 2008
3. Royce, "Software Project Management", Pearson Education, 1999

16UCA5ES02 GEOGRAPHICAL INFORMATION SYSTEM

Semester: V **Credits:4**
Category: ES2 **No. ofHrs/week: 6**

Objectives:

1. To understand Information basics with an emphasis on data-base management
2. To help in Acquiring geo-data with an emphasis on remote-sensing and photogrammetry;
3. To understand GIS' types and elements of GIS, Geo-objects and geo-modelling

UNIT I

Introducing GIS and spatial data: Definition - maps and spatial information -computer assisted mapping and map analysis - components of GIS - people and GIS - maps and spatial data - thematic characteristics of spatial data - other sources of

spatial data: census, survey data, air photos, satellite images, field data.

UNIT II

Spatial and attributes data modeling and Management: Data quality and data standards: Concepts - Definition - Components and assessment of data quality: Spatial entities - generalization - Raster and Vector spatial data structures - comparison of Vector and Raster Methods - Acquisition of spatial data for terrain modeling - Raster and Vector approach to digital terrain modeling - modeling network - layered approach and object - oriented approach - modeling third and fourth dimension - problem of data management - database management system - relational database model - liking spatial and attribute data - GIS database application and development.

UNIT III

Data Input and Editing: Integrated GIS database - Encoding methods of data input: keyboard, manual digitizing scanning and automatic digitizing methods, electronic data transfer - data editing: methods of developing and correcting errors in attributes and spatial data: reproduction, transformation and generalization - edge matching and rubber sheeting - integrated database.

UNIT IV

Data Analyzing Operation in GIS: Terminologies - Measurements of lengths, perimeter and area in GIS - queries - reclassification - buffering and neighborhood functions - integrated data - Raster and Vector overlay method: point-in-polygon, line-in-polygon and polygon- on-polygon - problems of Raster and Vector overlays - spatial interpolation - GIS for surface analysis - network analysis: shortest path problem, travailing problem, location allocation of resources - route tracing.

UNIT V

GIS Modeling for decision support: Models of spatial processes: natural and scale analogue models - conceptual models - mathematical model - models of physical and environmental processes - modeling human process - gravity model - problems related to using GIS to model spatial processes. Maps as output - alternative cartographic outputs - non-cartographic outputs - spatial multimedia - delivery mechanism - GIS and spatial decision supports - maps as decision tools.

TEXT BOOK:

1. Haywood.L, Comelius.S and S. Carver An Introduction to Geographical Information Systems, Addison Wiley Longmont, New York,(1988)
2. Burgh P.A (1986) Principles of geographical Information System for Land Resources Assessment, Clarendon Press, Oxford.

REFERENCE BOOKS:

1. 1.Burrough P A 2000 P A McDonnell [2000] Principles of Geographical Information systems, London: Oxford University Press.
2. Lo.C.P.,Yeung. K.W. Albert Concepts And Techniques of Geographic Information Systems, Prentice-Hall of India Pvt ltd, New Delhi.(2002)

16UCA5ES03 COMPUTER GRAPHICS AND MULTIMEDIA

Semester: V **Credits: 4**

Category: ES2 **No. ofHrs/week: 6Hrs**

Objectives:

1. To study the graphics techniques and algorithms.
2. To study the multimedia concepts.
3. To enable the students to develop their creativity.

UNIT I: 15Hrs

Introduction - Line - Curve and Ellipse Algorithms – Attributes –Two-Dimensional Geometric Transformations – Two-Dimensional Viewing.

UNIT II: 15Hrs

Three-Dimensional Object Representations – Three-Dimensional Geometric and Modeling Transformations – Three-Dimensional Viewing – Color models – Animation

UNIT III: 15Hrs

An Introduction – Multimedia applications – Multimedia System Architecture – Evolving technologies for Multimedia – Defining objects for Multimedia systems – Multimedia Data interface standards – Multimedia Databases.

UNIT IV: 15Hrs

What is mean by Animation? – History of Animation– Uses of Animation – Types of Animation – Principles of Animation – Animation on the WEB – 3D Animation – Animation file formats -Creating Animation-Animation softwares.

UNIT V: 12Hrs

Creating Animation in Flash: Introduction to Flash Animation – Introduction to Flash – Working with the Timeline and Frame-based Animation - Working with the Timeline and

Tween-based Animation – Understanding Layers - Action script.

TEXT BOOK:

1. Donald Hearn and M.Pauline Baker, "Computer Graphics C Version", Pearson Education, 2003.
2. (UNIT I: Chapters 1 to 6; UNIT 2: Chapter 9 – 12, 15, 16)
3. Prabat K Andleigh and KiranThakrar, "Multimedia Systems and Design",PHI, 2003.(UNIT 3)
4. Parekh Ranjan,"Principles of multimedia",Tata McGraw Hill Publication,2012.(UNIT 4)
5. Robert R & Snow D "Flash CS4 Professional Bible", Wiley Publishing,2009.(UNIT 5)

REFERENCE BOOKS:

1. JudithJeffcoate, "Multimedia in practice technology and Applications", PHI,1998.
2. Foley, Vandam, Feiner, Huges, "Computer Graphics: Principles & Practice", Pearson Education, third edition 2013.
3. Dowd Reinhardt, "Adobe Flash Cs4 Professional Bible", Tata McGraw Hill, 2009.

16UCA5ES04 ADVANCED JAVA PROGRAMMING

Semester: V **Credits: 4**

Category: ES2 **No. ofHrs/week: 4**

Objectives:

1. To understand the advanced concepts of java programming.
2. To understand how to create application using advanced java.
3. To learn and develop applications in a distributed environment.

UNIT-I JAVA SWING Hrs:15

Swing : Introduction to JFC (Java Foundation Classes) Swing Swing Features -JComponent-JApplet-JFrame-JPannel-JButtons, -Jcheckboxes- and JRadiobuttons-JTextField-JMenu-JMenuBar-JMenuItem-JOptionPane etc.

UNIT-II JAVA DATABASE CONNECTIVITY Hrs:15

Java and JDBC - JDBCVS ODBC -JDBC DRIVER MODEL - JDBC Driver Types -Two-tier Architecture for Data Access - Three-tier Architecture for Data Access -Types of Driver Managers -Database connectivity -Connecting to an ODBC Data Source -JDBC Programs

UNIT-III RMI AND NETWORKINGHrs:15

Introduction to RMI:(Remote method invocation)- RMI compiler -RMI registry - RMI configuration-RMI implementation- Examples Networking - Introduction to networking - Socket, Server Socket Classes - Client side programming - Server side Programming -TCP/IP protocols

UNIT-IV SERVLET Hrs:15

Introduction to Servlet - Servlet life cycle-Developing and Deploying Servlet-Handling Request and Response-Initializing a Servlet-Accessing Database - Servlet Chaining-Session Tracking - Management-Dealing with cookies

UNIT-V JAVA BEANS COMPONENTS Hrs:15

Beans- The Bean-Writing Process- Using Beans to Build an Application- Naming Patterns for Bean Components- Events Bean Property –Tubes- Bean info Classes- Property Editors Customizes

TEXT BOOKS:

1. Cay Horetmann, Gary CornelllCORE JAVA TM 2, Volume II-Advanced Features, 7th Edition ninth edition Pearson Publisher, 2013

REFERENCE BOOKS:

1. THE COMPLETE REFERENCE, Herbert Schildt Ninth Edition9th Edition,2014

2. ADVANCED JAVA 2 PLATFORM, HOW TO PROGRAM, 2nd Edition, Harvey. M. Dietal, Prentice Hall2

16UCA5SK01-SOFTWARE TESTING

Semester: V **Credits: 4**

Category: MC **No. ofHrs/week: 6**

Objectives:

1. To facilitate the intakes to obtain knowledge in analyzing the program flow and identify bugs overit in a systematic approach.
2. To describe strategies for generating test cases.
3. Provides skills to preparing test cases and use cases and test the programsthrough manual and automated tools.

UNIT I [6 Hrs]

Introduction and the role of Graphs: Software failures- Testing Process-Testing terminologies -Limitation of testing- V shaped software lifecycle model, Generations of Graph from Program - identification of independent paths.

UNIT II [7 Hrs]

Structural Testing and Software verification: Control flow testing- Data flow testing- slice based testing- Mutation Testing. Verification methods- SRS document verification - source code review- user document verification.

UNIT III [6 Hrs]

Software Testing Activities, Models and Metrics: Levels of testing- debugging - software test plan -software testing tools. Software metrics- categories of metrics- Object oriented metrics in software testing.

UNIT IV [5 Hrs]

Test cases and Use cases: Use case diagram and use cases-generation of test cases from use Cases - Guidelines for generating validity checks - database testing. Regression testing - Test cases -reducing the number of test cases.

UNIT V [6 Hrs]

Object oriented Testing and Testing the Web: Path testing-state based testing - class testing. Web testing- Functional Testing- User interface testing- usability Testing-Configuration and compatibility testing - security testing-performance testing.

TEXT BOOK

SinghYogesh, "SOFTWARE TESTING", Cambridge press, 2012.

REFERENCE BOOK:

1. Mathur P Aditya, "FOUNDATIONSOFSOFTWARE TESTING", Pearson, 2008.
2. Glenford J. Myers, Corey Sandler, "THE ARTOFSOFTWARE TESTING" Wiley 2011.
3. Perry William,"EFFECTIVEMETHODSFOR SOFTWARE TESTING", SecondEdition,PHI,1996.

SOFTWARE TESTING -LAB

1. Develop a test case to test Boundary values of a program.
2. Develop a test case using Robustness testing method.
3. Develop a test case using Worst case testing method.
4. Create a test case to test branch coverage.
5. Create a test case to test Loop coverage.
6. Create a test case to test Condition coverage.
7. Develop a test case to identify du dc paths.
8. Testing a program using Mutation technique.

9. Testing Windows application using Open source tool (Eg. Nunit)
10. Testing Web application using Open source tool (Eg.Selenium).
11. Testing applications using Microsoft Test Manager.

16UCA6MC01 DATA COMMUNICATION AND NETWORKS

UG **Offered to: BCA**
Semester: V **Credits: 5**
Category: MC **No. ofHrs/week: 5 Hrs**

Objectives:

1. To have a depth knowledge about data communication and networks.
2. To describe various transmissions and multiplexing methods.
3. to understand the utilities and tools of networking

UNIT I: [15hrs]

Networking basics: What are network-types of network-criteria of network, network topologies: What is topology-Types of topology, network cabling: co-axial-twisted pair-fiber optic, networking devices: router-repeater-bridge.

UNIT II: [15hrs]

The OSI model: The model – Functions of the layers, Signals: Analog and Digital – A periodic – periodic Signals – Simples analog signals – Digital Signals. Encoding – Digital -to-Digital – Analog-to- Analog

UNIT III: [9hrs]

Transmission of Digital Data: Digital Data Transmission – DTE – DCE Interface- Modems: Transmission Rate- Modem Standard, Transmission medium: Unguided media.

UNIT IV: [11hrs]

Multiplexing: Many-to-One, One-to-Many – Types – Multiplexing - The Telephone System, Error Detection and Correction: types of Errors – Detection – Error Correction.

UNIT V : [10hrs]

Domain Name System (DNS) –E-mail (SMTP)-World Wide Web (HTTP)-Simple Network management protocol (SNMP)-File Transfer Protocol (FTP)-Network Security: Firewall-Encryption and Decryption- network utilities, network tools.

TEXT BOOK:

1. Justin Sophia.I, Networks and programs, SciTech Publications, 2010. (Unit I, Unit V)
2. Behrouz Forouzan, "Introduction to Data Communications and Networking ", sixth Edition, Tata McGraw Hill, 2011.(Unit II,Unit III, Unit IV)

REFERENCE BOOKS:

1. D.P.Nagpal,"Data Communications and Networking", First Edition, S.Chand publishing, 2011.
2. Stallings William, "Data & Computer Communications", Eighth Edition, Pearson Education, 2006.
3. Larry L. Peterson, Bruce S.Davie," Computer Networks: A System Approach", Fifth Edition, Morgan Kauffman Publishers Inc., 2011.
4. Andrew .S. Tanenbum, "Computer Networks", Sixth Edition, Prentice Hall, 2009.

16UCA6MC02 MANAGEMENT INFORMATION SYSTEM

Semester: VI **Credits:4**

Category: MC **No. ofHrs/week: 4**

Objectives:

1. To understand the fundamentals of management information system.
2. To understand about various functions of MIS and decision support system
3. To understand basic information about ERP.

UNIT I Introduction Hrs: 15

Definition–characteristics –functions –pros and cons -structure -MIS support for planning -Organizing –Staffing - coordinating -Directing and controlling -Information for decision making

UNIT –II Information System Hrs: 15

System: Concept –characteristics –organization as a system. Information System: meaning –definition –features –needs – roles -major challenges of information system

UNIT –III Information System Processing Hrs: 15

Financial information-Marketing information -Personnel information–Production information-Materials information– Accounting information –input –output –model –advantages and disadvantages

UNIT –IV System Development Life Cycle Hrs:15

Introduction -System Investigation-Feasibility Study, System Analysis -Analysis Stages, System design–Tools –DFD –ER, System Implementation –Implementation Stages-System maintenance–Meaning -Needs

UNIT –V Information System Application Hrs:15

Introduction –Features -Data warehousing –Data Mining. Enterprise Resource Planning (ERP) - definition – Ideal ERP

System –pros and cons-Customer Relationship Management– Needs –Levels –Application. Decision support system – Components –Benefit

TEXT BOOKS:

1. Murthy C S V, MANAGEMENT INFORMATION SYSTEMS: Text & Application, Himalaya Publishing House, 2008.
2. Sadagopan.S, MANAGEMENT INFORMATION SYSTEMS PHI Learning, 2012.

REFERENCEBOOKS:

1. George M. Marakas, O' BrienJames A, Ramesh Behl, "MANAGEMENTINFORMATION SYSTEMS", Tata McGraw-Hill Education, 2009.
2. GuptaA. K. "MANAGEMENT INFORMATION SYSTEMS," Sultan Chand Publishing, 2010.

16UCA6MC03 PYTHON PROGRAMMING

Semester: VI **Credits:5**

Category: MC **No. ofHrs/week: 5Hrs**

Objectives :

1. To demonstrate an understanding the basic role of the Python Programming
2. To use the simple implementations of Python Programming
3. To understand the operating system interface.

UNIT – I: 15Hrs

Using the Python Interpreter - Interpreter and Its Environment - Introduction to Python - Using Python as a Calculator – Numbers- Strings - Unicode Strings – Lists.

UNIT – II: 15Hrs

Control flow tools - Defining Functions – more on functions – del statement - Tuples and Sequences – sets – Dictionaries –

looping techniques – more on conditions – comparing sequences and other types.

UNIT – III: 15Hrs

Modules – more on modules – Standard modules – packages – Directories - Input and Output - Fancier Output Formatting - Reading and Writing Files - Errors and Exceptions.

UNIT – IV: 15Hrs

Classes – Objects – Inheritances - Private Variables – Odds and ends - Exceptions Are Classes Too –Iterators – Generators - Generator Expressions.

UNIT – IV: 15Hrs

Standard Library – Operating Systems and Interface – File Wild cards – command line Arguments.

TEXT BOOKS:

1. Wesley J Chun," Core – Python Programming", Pearson education, 2001.
2. Steven M. Schafer and Wiley, HTML, CSS, Java script, Perl, Python and PHP, Dream Tech, 2005.

REFERENCE BOOKS:

1. Think Python: How to Think Like a Computer Scientist,Allen B. Downey,2012
2. Python Essential Reference, 4th Edition, Addison-Wesley Professional,, 2009
3. Python Cookbook, 3rd edition, O'Reilly Media, 2013.

16UCA6MC04 PYTHON PROGRAMMING-LAB

Semester: VI **Credits:**

Category: MC **No of hrs/week:5hrs**

Objectives:

1. To implement the concepts using python
2. To implement colours and buttons
3. To implement the files

Program List

1. Add Two Numbers
2. Print the Fibonacci sequence
3. Count the Number of Each Vowel
4. Check Leap Year
5. Make a Simple Calculator
6. Prime Numbers in an Interval
7. Find LCM - The least common multiple (L.C.M.)
8. Multiply Two Matrices & Matrix Multiplication using Nested Loop
9. Find HCF or GCD - The highest common factor (H.C.F) or greatest common divisor (G.C.D)
10. Find the Size (Resolution) of Image
11. Find Hash of File
12. User Lister
13. Find GIF files
14. Polynomial Evaluator
15. A Colourful, Useless Button

16UCA6MS01 SECURITY IN INFORMATION TECHNOLOGY

UG **Offered to :BCA**
Semester: IV **Credits:**
Category: MS **No. ofHrs/week: 6**

Objectives

1. To explore the fundamental concepts information security
2. To learn various issues related to information security

UNIT I 18Hrs

History, What is Information Security?, Components of an Information System, Balancing Information Security and Access, The Systems Development Life Cycle, The Security SystemsDevelopment Life Cycle, Security Professionals and Organization

UNIT II 18Hrs

Business Needs, Threats, Attacks, Secure SoftwareDevelopment, Legal, Professional and Ethical Issues

UNIT III 18Hrs

Risk Identification, Risk Assessment, Risk Control Strategies, Selecting Risk Control Strategies, Quantitative versus Qualitative Risk Control Strategies, Risk Management Discussion Points

UNIT IV 18Hrs

Information Security Planning and Governance, Information SecurityPolicy, Standards and Practices, Information Security Blueprint, Security Education, Training and Awareness Program, Continuity Strategies

UNIT V 18Hrs

Security Technology, Intrusion Detection and Prevention Systems, Scanning and Analysis Tools, Biometric Access

Control, Cryptographic Methods, Algorithms, Tools, Protocols for Secure Communications, Attacks on Cryptosystems

TEXT BOOK

1. Michael E Whitman and Herbert J Mattord, "Principles of Information Security", 4th Edition, Course Technology, Cengage Learning, 2012.

REFERENCE BOOKS

1. Micki Krause, Harold F. Tipton, "Handbook of Information Security Management",Vol 1-3 CRC Press LLC, 2004.
2. Stuart McClure, Joel Scrambray, George Kurtz, "Hacking Exposed", Tata McGraw-Hill, 2003.
3. Matt Bishop, "Computer Security Art and Science", Pearson/PHI, 2002.

BCA ALLIED OFFERED TO OTHER DEPARTMENTS

16UCA1AL01 MATHEMATICS FOR COMPUTER SCIENCE

Semester: I **Credits: 3**

Category: AL **No. of Hrs/week: 6**

Objectives:

1. To know the basic mathematics
2. To apply this techniques in computation
3. To implement some techniques using programming languages.

UNIT I **18 Hrs**

Matrices: Symmetric, Skew Symmetric, Hermitian Skew Hermitian, Orthogonal, unitary matrices, Rank and consistency of equations. Eigen values, Eigen vectors – Cayley Hamilton theorem (no proof).

UNIT II **18Hrs**

Statistics: Introduction – Nature of statistics – Data collection – Changing definition of Statistics – Sample mean – Deviations – Sample median – Sample mode – Sample variance & Sample Standard Deviation– Sample correlation coefficient.

UNIT III **18Hrs**

Graph Theory: Introduction – Basic concepts – Subgraphs – Degree of vertices – Paths & connectedness – Automorphism of a simple graph – Directed graphs.

UNIT IV **18Hrs**

Trees: Definition, characteristics & simple properties – Eulerian graph – Hamilton graph – Planar - Non planar graph.

UNIT V **18Hrs**

Numerical Methods: The solution of numerical, algebraic and transcendental equations using Regula – Falsi , Newton – Raphson's methods – Numerical Differentiation – Numerical Integration using simpson's rule, Trapezoidal rule.

TEXT BOOKS:

1. Shanti Narayan,P.K.Mittal," A Textbook of Matrices", S Chand & Co Ltd ,2010
2. R. Balakrishnan, K.Ranganathan ,"Text book of Graph Theory", Second Edition Springer science + Business Media Newyork 2012 .
3. Sheldon M Ross,"IntroductoryStatistic"s, Third Edition, Elsevier Academic Press, 2010.

16UCA2AL01 MICROPROCESSOR 8085

Semester: II **Credits: 3**

Category: AL **No. of Hrs/Week: 6**

Objectives:

To make the students to

1. Identify the basic element and functions of 8085 microprocessor.
2. Describe the architecture of 8085 microprocessor.
3. assembly language program.

UNIT I 12Hrs

Introduction, Advances in semiconductor technology, Organization of microprocessor based system, 8085 microprocessor and Architecture.

UNIT II 12Hrs

8085 Bus organization, Demultiplexing the bus AD7-AD0, Generating control signals. ALU, Timing and control unit, Instruction register and decoder, Register array, Decoding and executing an instruction.

UNIT III 12Hrs

Opcode fetch machine cycle, Memory read machine cycle, Memory write machine cycle, IO read machine cycle, IO Write machine cycle, Execution time of the instruction cycle.

UNIT IV 12Hrs

Instructions, Data format and storage, Addressing modes, Instruction classification - Data transfer instructions, Arithmetic instructions, Logical instructions, Branching instructions, Machine control instructions, Assembly language programs Addition/Subtraction of 8 bit data, Interchanging a block of data, Largest of N numbers, Number of 1 's& 0's in a 8-bit data, Look-up table.

UNIT V 12Hrs

Counters and time delays, Time delay using single register and register pair, Stack and subroutines, Call and return instructions, Advanced subroutine concept. Assembly language programHexadecimal counter ,Sum of odd and even numbers , Hex to BCD conversion.

TEXT BOOK

Ramesh.S.Goankar "Microprocessor Architecture, Programming & Applications With 8085" 5th Edition - Penram International – 2011.

REFERENCE BOOKS

1. Soumitra Kumar Mandal, "Microprocessors and Microcontrollers Architecture, Programmingand Interfacing using 8085, 8086 and 8051", 1st Edition. Tata McGraw-Hill, 2011.
2. Krishna Kant, "Microprocessors And Microcontrollers: Architecture Programming And System Design 8085, 8086, 8051,8096", PHI Learning Pvt. Ltd., 2010.
3. M.Rafiquzzaman "Microprocessors-Theory and Applications", Edition PHI, 2009.
4. D.V.Hall"Microprocessor and Digital System", McGraw Hill Publishing Company, 2008.

MICROPROCESSOR PRACTICAL –LAB

Write an ALP for the following.

1. Program to add two 8-bit numbers.
2. Program to subtract two 8-bit numbers.
3. Program to add two multi byte binary number.
4. Program to add N one byte numbers.
5. Program to add two BCD numbers.
6. Program to implement multiplication by successive addition method.
7. Program to find square of decimal number using Look-up table.
8. Program to move data block with and without overlap.
9. Program to find the smallest of N numbers.
10. Program to perform linear search over a set of N numbers. Display FF and its position if found otherwise 00.
11. Program to check the 4th bit a number is 0 or 1. Display FF if 1 otherwise display 00.
12. Program to find number of 1 's and 0's in 8-bit number.
13. Program to find sum of ODD and EVEN numbers.
14. Program to sort an array.

15. Program to implement BINARY to BCD conversion using subroutine.
16. Program to implement decimal up counter.
17. Program to implement real time clock.

16UCA4AL01 ACCOUNTING AND ERP PACKAGE

Semester: IV **Credits: 3**

Category: AL **No. of Hrs/week: 6 Hrs**

Objectives:

1. To impart the students with the basic principles and concepts of accounting.
2. To provide Knowledge on the use and application of computer in accounting.
3. To implement the concepts using package.

UNIT I

Introduction to Tally – Features of Tally – Starting Tally – Company creation – alteration and deletion – Hierarchy of account groups and ledgers – A/c groups of balance sheet – Assets and Profit & Loss a/c – A/cs group creation - A/c ledger creation – Financials problems-alteration and deletion.

UNIT II

Voucher entry – Tally a/c Voucher types – Contra Voucher – payment Voucher – receipt Voucher– journal Voucher – purchase Voucher – sales Voucher – Voucher alterations, deletion and cancellation – single mode Voucher entry – A/c Voucher lists – Pay book – Trial balance.

UNIT III

Cost centre – Cost category – Voucher entries using cost centre – Payroll preparation – Budget creation and alteration – TDS – TCS – VAT.

UNIT IV

Inventory information – Inventory masters – units of measure – stock group – stock item – stock

category – godowns – Inventory vouchers – Receipt note voucher – Rejections in voucher – Delivery note vouchers - Rejections out voucher – Stock journal voucher – Physical stock voucher – Creating purchase order and sales order - invoicing

UNIT V

Accounting and inventory books and reports - Data Collaboration – Security – Tally vault – Tally audit – Export of data – data formats – internet connectivity – E mailing tally report as attachments – import of tally data – migrating tally data – ODBC connectivity – connecting tally data into MS word document and excel worksheet – Backup - Restore.

TEXT BOOK:

Implementing Tally – AK Nadhani and KK Nadhani, BPB Publications, 2007. (Unit I and II, Unit IV and V).

Tally, Namrata Agarwal, Dreamtech Press, 2007.(Unit III)

REFERENCE BOOKS:

1. Tally.ERP 9 Made Simple Basic Financial Accounting, Ashok K Nadhan, BPB publisher, 2012.
2. Tally. ERP 9 in Simple Steps, Kogent Learning Solutions Inc. ,Dreamtech Press, 2010.

16UCA4AL01 ACCOUNTING AND ERP PACKAGE

1. Creation, alteration and deletion of company
2. Creation, alteration and deletion of primary and secondary accounting groups.
3. Final A/Cs with adjustments (Creation and deletion of ledgers)
4. Voucher entry problems in double entry mode
5. Voucher entry problem in single entry mode.
6. Voucher entries using cost centres
7. Budget preparation and reporting variance
8. Payroll preparation
9. Accounting vouchers using stock items
10. Order processing and inventory vouchers
11. Generation of accounting books and reports
12. Generation of inventory books and reports.