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

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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]

UNIT II  [16 Hrs]

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]
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:

REFERENCE BOOKS:

16UCA1MC02 WEB DESIGNING LAB
Semester: I Credits: No. ofHrs/week: 4
Category: MC

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.
13. Create Login Form using arrays in Java Script.
14. Functions in JavaScript.
15. Dialog boxes 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.

~ 5 ~
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


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:


REFERENCE BOOKS:

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)

UNIT III  (15hrs)

UNIT IV  (12hrs)

UNIT V  (12hrs)
TEXT BOOK:

REFERENCE BOOKS:

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

~ 9 ~
8. Simple Structures
9. Structures with Pointers
10. File 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

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

UNIT- IV: 12hrs
Supply chains as Systems - Modeling the Supply Chain – Supply Chain Software - Meeting Demand – Maintaining Supply – Measuring Performance

UNIT - V: 12hrs

TEXT BOOK:
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)

REFERENCE BOOKS:
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:
REFERENCE BOOKS:

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

JAV A 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. of Hrs/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
REFERENCE BOOKS:


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

Unit 2: Ratio Analysis
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

Course References
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.

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]

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]

TEXT BOOK

REFERENCE BOOKS

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.

16UCA4ES01 LINUX PROGRAMMING

Semester: IV Credits: 4
Category: MC No. of Hrs/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]

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]

UNIT V [8 Hrs]

TEXT BOOK

REFERENCE BOOKS

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. of Hrs/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


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, ScrollView, Action Bar
8. Creating User Interface Programmatically
9. Registering Events for Views

UNIT III 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
3. Specialized Fragments: List Fragment, Dialog FRAGMENT, Preference Fragment Menus 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

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

REFERENCE BOOKS

WEB RESOURCES
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.

~ 25 ~
UNIT I: Marketing and the Marketing Process

UNIT II: Consumer/ Business Market Segmentation

UNIT III: Product and Pricing Strategies

UNIT IV: Marketing Channel and Communication Strategies

UNIT V: Digital Marketing

Course Text:

Course References:
16UCA5MC01 OPEN SOURCE TECHNOLOGY

Semester: V Credits: 4
Category: MC No. of Hrs/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


UNITII OPENSOURCEDATABASE Hrs: 15


UNITIII Open Source Programming Languages Hrs: 15

UNIT IV PYTHON Hrs:15

UNIT V PERL Hrs:15

TEXT BOOKS:
1. Remycard, Ericdumas and frankmevel, “THE LINUX KERNEL BOOK”
2. Wiley publications, 2006

REFERENCE BOOKS:
1. Rasmus Lerdorf And Levin Tatroe, “PROGRAMMING PHP”, O’Reilly, 2012
4. PYTHON COOK BOOK O’Reilly media 2013
16UCA5MC02 OPEN SOURCE TECHNOLOGY – LAB

1. Installation of Linux
2. Generating random number using shell script.
3. Changing file permissions using shell script
4. Executing baseing commands using Linux
5. Executing text editing commands in Linux.
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. of Hrs/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

UNIT II  12 Hrs

UNIT III  12 Hrs
UNIT IV 12 Hrs

UNIT V 12 Hrs

Case study : The Linux System.

TEXT BOOK:

REFERENCE BOOKS:

E-BOOK:
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]

UNIT II  [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]
Rumbaugh Methodology – Booch Methodology – Jacobson Methodology – Patterns Frameworks

UNIT V  [13 hrs]
Object-Oriented Analysis: Identifying use cases- Use-Case Model-Developing the Effective Documentation - Analysis – Classification – Identifying Object relationships, Attributes and Methods.

TEXT BOOKS:


REFERENCE BOOKS:

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

UNIT III:  15Hrs

UNIT IV:  15Hrs
UNIT V: 15Hrs

TEXT BOOK:

REFERENCE BOOKS:

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

UNIT III

UNIT IV
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:


REFERENCE BOOKS:

16UCA5ES03 COMPUTER GRAPHICS AND MULTIMEDIA

Semester: V  Credits: 4
Category: ES2  No. of Hrs/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

UNIT II: 15Hrs
Three-Dimensional Object Representations – Three-Dimensional Geometric and Modeling Transformations – Three-Dimensional Viewing – Color models – Animation

UNIT III: 15Hrs

UNIT IV: 15Hrs

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:**

2. (UNIT I: Chapters 1 to 6; UNIT 2: Chapter 9 – 12, 15, 16)

**REFERENCE BOOKS:**


**16UCA5ES04 ADVANCED JAVA PROGRAMMING**

*Semester: V* 
*Category: ES2* 
*No. of Hrs/week: 4*

*Credits: 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

UNIT-II  JAVA DATABASE CONNECTIVITY Hrs:15
Java and JDBC - JDBC VS 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 NETWORKING Hrs: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:
REFERENCE BOOKS:

16UCA5SK01-SOFTWARE TESTING
Semester: V  Credits: 4
Category: MC  No. of Hrs/week: 6
Objectives:
1. To facilitate the intakes to obtain knowledge in analyzing the program flow and identify bugs over it 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 program through manual and automated tools.

UNIT I  [6 Hrs]

UNIT II  [7 Hrs]

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

REFERENCE BOOK:

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)
11. Testing applications using Microsoft Test Manager.

16UCA6MC01 DATA COMMUNICATION AND NETWORKS

UG Offered to: BCA
Semester: V Credits: 5
Category: MC No. of Hrs/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]

UNIT II: [15hrs]
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

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”,
  Communications”, Eighth Edition, Pearson Education,
  2006.
3. Larry L. Peterson, Bruce S.Davie,” Computer
  Networks: A System Approach”, Fifth Edition,
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

UNIT –V Information System Application Hrs:15
Introduction –Features -Data warehousing –Data Mining. Enterprise Resource Planning (ERP) - definition – Ideal ERP

TEXT BOOKS:

REFERENCE BOOKS:

16UCA6MC03 PYTHON PROGRAMMING
Semester: VI Credits: 5
Category: MC No. of Hrs/week: 5 Hrs

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

UNIT – II: 15 Hrs
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


UNIT – IV: 15Hrs


TEXT BOOKS:


REFERENCE BOOKS:

1. Think Python: How to Think Like a Computer Scientist, Allen B. Downey, 2012
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. of Hrs/week: 6

Objectives

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

UNIT I 18Hrs

UNIT II 18Hrs
Business Needs, Threats, Attacks, Secure Software Development, 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

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


REFERENCE BOOKS

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

UNIT II  18Hrs

UNIT III  18Hrs

UNIT IV  18Hrs
Trees: Definition, characteristics & simple properties – Eulerian graph – Hamilton graph – Planar - Non planar graph.

UNIT V 18Hrs

TEXT BOOKS:

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 program Hexadecimal counter, Sum of odd and even numbers, Hex to BCD conversion.

TEXT BOOK
REFERENCE BOOKS


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**  
**Category: AL**  
**Credits: 3**  
**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**


**UNIT II**

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

UNIT IV

UNIT V

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

REFERENCE BOOKS:
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.