LOYOLA COLLEGE (AUTONOMOUS)
DEPARTMENT OF COMPUTER SCIENCE
BACHELOR OF COMPUTER APPLICATIONS
(Effective from the Academic year 2012 -2013 onwards)

SEMESTER III

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SEMESTER IV

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Objectives:
1. To introduce the fundamentals of Data Structures, Abstract concepts and how these concepts are used in problem solving.
2. To create and use new, simple and complex data types within C++ programs.

UNIT I
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

UNIT II
Constructors and Destructors. Constructors-Parameterized, Multiple Constructors- dynamic constructors-
destructors .Operator overloading and Type Conversions, Inheritance: Extending classes. Pointers, virtual
functions and polymorphism.

UNIT-III
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
and closing a file-EOF-File modes-File pointers-sequential I/O Operations. Templates, Exception
Handling.

UNIT IV
Stack and Queue — Fundamentals of stack and Queues — Evaluation of Expressions –
Linked List: Singly Linked List – Polynomial Addition – Doubly Linked List -Tree: Binary Tree
Representation and Traversal. Sequential search, Binary search Graphs – Graphs representation –Graph
Traversal – Depth First Search – Breadth First Search

UNIT V
Sorting – Insertion Sort – Quick Sort – Merge Sort – Heap Sort – Hashing – Hash tables Hash functions-
Priority Queues- Single and double ended Priority Queues- Multiway Search Trees – B-Trees – B+ Trees

Text Book :

2006, Silicon Press.

Reference Books:
Addison Wesley Publishers.

2nd edition , Tata Mcgraw Hill.
Semester: III
Category: MC

CA 3505 - DATA STRUCTURES USING C++ - LAB

Credits: 5
No. of Hrs/week: 5

Objectives:

1. To acquire skills in C++ programming with object oriented concepts

2. To understand the data structures and implement through C++ programming language

Develop C++ programs to perform the following:

1. To implement call by reference and return by reference

2. To implement the concept Function overloading

3. To develop and use virtual and inline functions

4. To find the sum and average of n numbers using friend function.

5. To read two matrices of size m x n and perform addition / subtraction.

6. To read two matrices and perform multiplication if the order satisfies the criteria.

7. To find the sum of two complex number using constructor.

8. To generate Fibonacci series using class.

9. To simulate the working of a queue of integers using array with the operations Insert, Delete and Display through arrays.

10. To read and display the "Employee information" using the class with the following details
    a) Emp_id b) Name c) Designation d) Dept e) Basic pay

11. To prepare payroll for 'n' employees.

12. To create a String type class and implement the string operations

13. To create a class called STACK using an array of integers and to implement the stack operations.

14. To create a class called LIST (linked list) with the member functions to insert and delete elements at the front position of the list.

15. To implement the Queue and perform the operations over it.

16. To perform    a) Sequential search    b) Binary search

17. To perform    a) Insertion sort    b) Bubble Sort
CA 4504 - VISUAL PROGRAMMING AND ORACLE

Objectives:

1. To build and run small applications using Visual Basic.
2. To gain knowledge about the DML, DDL operations and to develop a Database with enhanced models and Techniques and to understand about RDBMS and issues.

UNIT I
Introduction to Visual Basic: Getting started in Visual Basic – Adding an event procedure – Adding controls – Adding additional event procedures; Data and Operations; Data values and operators – Variables and declaration statements – Assignment statements – Using intrinsic functions.

UNIT II
Controlling I/O: Interactive user input – Formatted output – Named constants: Selection; Repetition structures; Sub procedures and functions; Structured data: 1-Dimensional arrays – Control arrays. Basic graphical user interface concepts; advanced graphical user interface concepts - Windows common dialogs; the chart and grid controls; the timer, shape, line and toolbar controls.

UNIT III
Database management system: data basics and definitions- Entity relationship model- normalization (INF, II NF, III NF, BCNF) - data integrity-relations-domains-candidate key-primary key- foreign key – data independence- three level architecture- client server architecture.

UNIT IV

UNIT V
Text Books:

Reference Books:
1. Deitel & Deitel, Visual Basic 6 How to Program, Pearson Education, 5th Indian Reprint 2005, India
2. Cornell Gary, Visual Basic 6 From the Ground Up, 14th Reprint 2003, Tata Mc Graw Hill , India
Objectives:

1. To build and run small application using Visual Basic.

2. To design database tables and design screens in Visual Basic to interact them.

1. Design a Simple calculator using Visual Basic Controls.

2. Design a Course Application form using Visual Basic Controls.

3. Design a student mark statement using Visual Basic Controls.

4. Write a visual basic program to convert Celsius to Fahrenheit temperature using Function.

5. Write a visual basic program to convert Celsius to Fahrenheit temperature using general Procedure.

6. Write a visual basic program to find out factorial of n numbers using Function

7. Write a visual basic program to find out factorial of n numbers using general Procedure.

8. Design a Visual Basic Application to find out sum and average of two numbers using Input Box.

9. Write a visual basic program to convert Celsius to Fahrenheit temperature using Input Box.

10. Write a visual basic program to find out factorial of n numbers using recursion.

11. Design an Electricity bill calculation form using Visual Basic Controls.

12. Design a Visual Basic Application to insert the text box content into the ListBox.


14. Write a visual basic program to find out sum and average of n numbers using Function

15. Data Manipulation Language

16. Data Definition Language

17. Insertion of data into database
18. Searching a record in the database

19. Develop a Library management system

20. Student mark statement generation

Semester: V  
Credits: 5  
Category: MC  
No. of Hrs/Week: 5  

CA 5508 - C# WITH ASP.NET

Objectives:

1. To understand the goals and objectives of the .NET Framework.
2. To apply C#.NET programming techniques to various real world problems.

UNIT I

UNIT II

UNIT III

UNIT IV
Threads: Thread Class, Parallel classes. Manipulating Files: Managing the file system, Moving, Copying and Deleting files, Reading and writing to files. ADO.NET: Overview, Database Connections, Commands, Data Reader, Dataset, Persisting Dataset changes.

UNIT V

Text Book:

Reference Books:
3. Griffiths Ian, Adams Matthew, Liberty Jesse, “Programming C# 4.0” 2010, O’REILLY, Delhi

Web resources:
1. http://csharp.net-tutorials.com
Objectives:

1. To provide basic programming constructs of C#.NET programming language.
2. To provide skills to create a ASP.NET Web Application.

C#.NET

1. Create an application to work as a calculator to perform all the arithmetic calculations.
2. Write a program to display dates in different formats.
3. Write a program to implement abstract class and inheritance.
4. Develop an application to demonstrate polymorphism.
5. Develop an application to illustrate the working of instance and shared constructors and destructors.
6. Write a program using parameterized constructor.
7. Write a program to store information in memory variables using class.
8. Develop an application to demonstrate implementation of inheritance.
9. Write a program which implements the concept of overriding.
10. Develop an application and include code to handle errors using user defined exceptions.
11. Write a program which implements FileStream class.
12. Write a program which implements StreamReader and StreamWriter class.
13. Write a program using ArrayList.
14. Write a program to demonstrate data base connection and displaying the data using disconnected architecture using SQL.
15. Develop an application to display data from the database in a DataGrid using SQL Data provider.
16. Write a program to navigate through the records in a table.

ASP.NET

17. Create an application which demonstrates the use of web server controls.
18. Create a program to populate the Drop Down List.
19. Write a program to demonstrate output caching.
20. Demonstration of using web services in web application.
21. Creating a web service to perform calculations.
22. Create a complete web page using ASP.NET.
Objectives:

1. To have a basic knowledge of processes, Scheduling concepts, memory management.
2. To have a better understanding in Input and Output and File system.

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

Text Book:


Reference Books:

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

UNIT I

UNIT II

UNIT III
Object-Oriented Analysis: Identifying use cases- Use-Case Model-Developing the Effective Documentation -Case study: Analyzing the ViaNet bank ATM- Analysis – Classification – Identifying Object relationships ,Attributes and Methods –Case study: Relationship Analysis for the ViaNet Bank ATM System.

UNIT IV

UNIT V
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.

Text Books:
Reference Books:


Objectives:

1. To understand open source, Server Side Script and database concept.
2. To gain knowledge in developing application using PHP and MySQL.

UNIT I
Introduction: History of PHP, Apache Web Server, MySQL and Open Source - Relationship between Apache, MySQL and PHP - PHP configuration in IIS - Apache Web server-WAMP Server - Installation of WAMP server-execution of PHP.

UNIT II

UNIT III
Working with functions and Data: Variable Functions - String functions - Math function - Date function - Array Function - File Function - Form elements - User input - Validating user input - passing variables with session-cookies-forms - Error handling in PHP.

UNIT IV
Introduction to MySQL: MySQL structure and syntax - Types of MySQL tables and storage engines - MySQL commands - Integration of PHP with MySQL - Connection to the MySQL server - Working with PHP and arrays of data - Referencing two tables - Joining two tables.

UNIT V
Working with Data: Creating a table - Manipulating the table - Filling the table with data - Adding links to the table - Adding data to the table - Displaying the new information - Displaying the movie details - Editing the database - Inserting a record - Deleting a record - Editing data - Searching a record - Designing of complete application.

Text Book:
Naramore Elizabeth, Gerner Jason, Scouarnec Le Yann, Stolz Jeremy, Beginning PHP, Apache, MySQL Web Development

Reference Books:
1. Melone C. Julie “PHP, MySQL and Apache”, Pearson Education
2. Doyle Matt “Beginning PHP 5.3”, Wrox Publication
Objectives:

1. To acquire practical knowledge of the Server Side Scripting and database basics.
2. To develop applications using PHP and MySQL

1. Installation of WAMP server.
2. Designing your profile page using PHP
3. Working with PHP operators
4. Working with different types of looping statements using php
5. Working with different types of array using php
6. Working with PHP functions
7. Working with PHP forms
8. PHP form validation
9. Working with PHP math/date function
10. Executing DML and DDL commands using MySQL
11. Joining tables
12. Retrieving data from table using PHP
13. Inserting data into table using PHP
14. Create an application using PHP and MySQL.
15. Filtering the data
16. Create a complete webpage using PHP and MySQL.
Objectives:
1. To have a depth knowledge about data communication and networks.
2. To describe various transmissions and multiplexing methods.

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

Text Book:

Reference Books:
Objectives:
1. To reveal the principles of data retrieval from large databases through data mining
2. To acquire knowledge in different mining principles
3. To acquire knowledge in prediction and classification

UNIT I
Introduction - Data mining: Motivation - On what kind of data - Data Mining Functionalities - Classification of Data Mining systems - Major Issues in Data Mining systems. Data Preprocessing - Data cleaning - Data Integration and Transformation - Data Reduction - Discretization and concept Hierarchy Generation.

UNIT II
Mining Association Rules in Large Databases - Association Rule Mining - Mining Single-Dimensional Boolean Association rules from Transactional Databases - Mining Muti level Association Rules - Mining Multidimensional Association Rules - From Association Mining to Correlation Analysis - Constraint- Based Association Mining.

UNIT III
Classification and Prediction - What is Classification and Prediction - Issues regarding Classification and Prediction - Classification by Decision Tree Induction - Bayesian Classification - Classification by Back propagation - Other Classification Methods - Prediction - Classifier Accuracy.

UNIT IV

UNIT V
Applications and Trends in Data Mining - Data Mining Applications - Data Mining System Products and Research Prototypes - Additional Themes on Data Mining - Social Impacts of Data Mining - Trends in Data Mining.

Text Book:

Reference Books:
Objectives:

1. To give a detailed overview of Linux Structure
2. To Provide the required skills in Linux Shell Script.

UNIT I
Introduction to Linux, Shell, Shell Programming - Pipes and redirections, creating and executing shell scripts – Environment Variables - Parameter Variables-Shell syntax, Variables.

UNIT II
Conditions - Control structures –For, While, Until, Case, User defined Functions Shell Commands - Arithmetic Expansion- Parameter Expansion - Linux file structure - Library functions.

UNIT III
Low level file access - standard I/O library- File and directory maintenance Program arguments – Time and date - File locking.

UNIT IV

UNIT V

Text Book:


Reference Books:


Web Resources:

http://www.ee.surrey.ac.uk/Teaching/Unix/
http://www.freeos.com/guides/lsst/
Objectives:

1. To learn the different types of cloud computing services
2. To make a cloud computing application unique, managing and working with cloud security.

UNIT I

UNIT II
Infrastructure - Platforms - Virtual Appliances - Communication protocols - Applications - Connecting to the cloud - Cloud Services: Infrastructure as a Service - Platform as a Service - Software as a Service

UNIT III

UNIT IV
Securing the data - Moving applications to the cloud - Cloud Storage: Definition – Provisioning - Cloud storage - Cloud Backup solutions - Cloud storage Interoperability

UNIT V
Moving applications to the Cloud - Case Study: Google Web Services, Amazon Web Services - Microsoft Cloud Services.

Text Book:

Reference Books:

Web References:
Objectives:
1. To provide the students with the basics of Android Software Development tools.
2. To provide skills to develop applications on mobile platform and deploying software to mobile devices.

UNIT I
Exercises:
1. Exploring the Eclipse, Exploring Emulator
2. Styles, Themes And Progress Dialog
3. Linking Activities With Intent

UNIT II
Activities, Fragments and Intents - Getting to know the Android User Interface.
Exercises:
1. Fragments: Adding Fragments Dynamically, Communication Between Fragments
2. Intent Filters
3. Adding Categories, Displaying Notifications On Status Bar
4. View Groups: Linear Layout, Absolute Layout, Table Layout, Relative Layout, FrameLayout, Scroll View, Action Bar
5. Creating User Interface Programmatically
6. Registering Events for Views

UNIT III
Designing your User Interface with Views - Displaying pictures and menus with Views. Exercises:
1. Basic Views: Handling View Events, Text View, Buttons, Progress Bar View, Auto CompleteTextView
3. Specialized Fragments: List Fragment, Dialog Fragment, Preference Fragment
4. Menus with Views
UNIT IV
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
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
Case Study: Create an Android Application and prepare it for publishing

Text Book:
1. Lee Wei-Meng, 2012,"Beginning Android 4 Application Development", Wiley India

Reference Books:
2. Meier Reto, "Professional Android 2 Application Development",2010, Wiley India

Web References:
2. www.vogella.com/articles/Android/article.html
3. www.coreservelets.com/android-tutorial/
4. www.edumobile.org/android/category/android-beginner-tutorial/
5. www.edureka.in/blog/category/android/android-development-tutorial/
Objectives:
1. To facilitate the intakes to obtain knowledge in analyzing the program flow and identify bugs over it in a systematic approach.
2. This paper provides skills to preparing test cases and use cases and test the programs through manual and automated tools.

UNIT I

UNIT II

UNIT III
Software Testing Activities, Models and Metrics: Levels of testing- debugging- software test plan- software testing tools- case study. Software metrics- categories of metrics- Object oriented metrics in software testing- software quality attributes in prediction Model.

UNIT IV
Test cases and Use cases: Use case diagram and use cases- generation of test cases from use cases- Guidelines for generating validity checks- strategies for data validity- database testing. Regression testing- Test cases-reducing the number of test cases- risk analysis.

UNIT V

Text Book:

Reference Books:
SOFTWARE TESTING - LAB

1. Creation of script record and playback with sample application.
2. Creation of script and adding data verification point.
3. Creation of script and adding properties verification point.
4. Creation of script and including script support function.
5. Creation of a message box and adding include in a script.
6. Creation of script with handle unexpected active windows.
7. Creation of Java helper class and put unexpected active window.
8. Creation of script and use shared test object map.
9. Insertion of verification point with data pool reference
10. Creation of data pool and adding data pool records to a script.
11. Testing a web application with data pool.
12. Testing a window application (VB.NET) with data verification point.
Objectives:

1. To understand the different types of network and directory services.
2. To design a network and configure the networking resources and the administrate and manage networks in an organization.

UNIT I

UNIT II

UNIT III
Workstation – Loading operating system, Updating system software and architecture, Network Configuration – Server – server hardware, client and server OS configuration, Maintaining data integrity Services – single and multiple services, client requirements, operational requirements- Data Centres- Location, access, security, Racks, wiring, labels.

UNIT IV

UNIT V

Text Books:

Reference Books:

NETWORK ADMINISTRATION LAB

1. Learn Basic Network administration commands.
   a)PING  b)TRACERT  c)PATHPING  d)NETSTAT  e)AT  f) NET  g) ROUTE  h)ARP
   i) IPCONFIG  j) NETSH

2. Setting up simple LAN network.

3. Practice installation of windows 2003 server

4. Practice configuring server/client setting in windows 2003 server

5. Assigning IP Address to remote user.

6. Practice configuring windows 2003 server to use Domain Name System(DNS)

7. Practice on configuring windows 2003 as a DHCP client

8. Practice on configuring windows 2003 as a DHCP server


10. Practice sharing printer in network

11. Configuring the system to connect internet.
CA 6613- PROJECT WORK

Objectives:

1. To provide skills to identify a problem to be automated with social relevance.
2. To develop skills in analysing real world problems and prepare problem statements.
3. To design with various design representation including architectural design, database design and GUI design.
4. To apply the coding skills and develop the system.
5. To prepare test cases and test the system through unit testing, integration testing and acceptance testing.
6. To apply proper validation to the system developed.
7. To prepare user manual and maintenance guidelines.
8. To provide documentation and presentation skills.

Mode of Evaluation: Internal

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CA 6657 - PROGRAMMING IN JAVA

Objectives:
1. This course aims at an easy understanding and mastering of Java Language.
2. This covers in-depth all the major programming concepts.

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V
Text Books:


Reference Books:

1. Write a Java Program to find out area of circle
2. Write a Java Program that will display Factorial of the given number.
3. Write java program to perform all basic arithmetic operation
4. Write a Java Program to find out biggest of 3 numbers
5. Write a Java Program that will accept command-line arguments and display the same.
6. Write a Java Program to sort the elements of an array in ascending order.
7. Write a Java Program which will read a text and count all occurrences of a particular word.
8. Write a Java Program to print the reverse of the given string
9. Write a Java Applet that creates some text fields and text areas to demonstrate features of each.
11. File Read/Write operation using java
12. Write java program to perform Java database connectivity
Objectives:

1. To provide the basics of the digital multimedia systems.
2. To practice the multimedia technologies including sound, video, digital video and animation.

UNIT I

UNIT II

UNIT III

UNIT IV
Motion Caption – Formats – Methods – Usages – Expression – Motion Capture Software’s – Script Animation Usage – Different Language of Script Animation Among the Software.

UNIT V

Text Books:

Reference Books:
1. Animation on the web
2. Image Special Effects.
3. Drawing in flash
4. Copy a bitmap from one application and pasted into flash
5. Working with time line
6. Shape tweens
7. Motion tweens
8. Frame by frame animation
9. Texturing & Lighting of 3D Animation
10. Script Animation
11. Simple 3D Animation
12. Create a 1 minute animated movie which will convey an action
13. Story Developing with color model and Video Effects.