Core Paper - V

ADVANCED RELATIONAL DATABASE MANAGEMENT SYSTEM

Instructional Hrs. : 60   **Sub. Code : 16CSPC105 /**
                                                               16CAPC310

Max. Marks : CIA -25; ESE -75   **Credits: 4**

Objective : To enable the students to gain knowledge on Advanced RDBMS, Object oriented databases and Data modeling.

UNIT I   **12 Hrs.**

Databases and Database Users: Introduction **Database System Concepts:** Data Models, Schemas and instances – Three schema Architecture and Data Independence – *Database Languages and Interfaces* – Database System Environment .

Data Modeling Using ER Model: Entity Types, Entity Sets, Attributes and Keys – Relationships, Relationship Types, Roles and Structural Constraints – Weak Entity Types – ER Diagrams, Naming Conventions and Design issues - Enhanced Entity-Relationship (EER) Modeling.

UNIT II   **12Hrs.**

SQL: Data Definition Language(DDL) – Data Management and Retrieval - Working with Tables Functions and *Grouping* - Join and Set Operators **Advanced Features: Objects, Transactions and Data Control:** Views.

UNIT III   **12 Hrs.**

Functional Dependencies and Normalization for Relational Databases: Informal Design Guidelines – Functional Dependencies - Normal Forms Based on Primary Keys – Definitions for Second and Third Normal Forms – *Boyce – Codd Normal Form*. **Relational Database Design Algorithms and Further Dependencies :** Multivalued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form.

Introduction to Transaction Processing Concepts and Theory: Introduction to Transaction Processing – Transaction and System Concepts – Desirable Properties of Transaction – Transaction Support in SQL.

UNIT IV   **12 Hrs.**

PL/SQL Cursors and Exceptions: Cursors – Implicit Cursors – Explicit Cursors – Explicit Cursors Attributes - *Implicit Cursors Attributes* – Cursor FOR Loops – SELECT …FOR UPDATE Cursor – WHERE CURRENT OF Clause – Cursor with Parameters – Cursor Variables: An Introduction – Exceptions – Types of Exceptions. **PL/SQL Named Blocks**: Procedures- Functions – Packages – Triggers.

UNIT V   **12 Hrs.**

Enhanced Data Models for Advanced Applications : Multimedia Databases- **Introduction to Deductive Databases:** Overview of deductive Databases – Prolog/Datalog Notation-Clausal form and Horn Clauses –*Interpretation of Rules* –Datalog Programs and their Safety.
Distributed Databases: Distributed Database Concepts – Types of distributed Database Systems

Note: Self study topics are denoted in *Italics*
TEXT BOOKS
1. **Ramez Elmasri, Shamkant B. Navathe,** *Fundamentals of Database Systems*, PearsonEducation, Fourth Edition, 2005
 2**. Nilesh Shah**, *Database Systems Using Oracle*, Pearson Education, Second Edition. (Unit II & IV)

REFERENCE BOOKS
1. **Abraham Silberschatz, Henry F. Korth, Sudarshan .S**, *Database System Concepts*, MCGraw – Hill International, 6th Edition, 2014.
2. **Kandare S.S,** *Database Management and Oracle Programming*, S.Chand & Company Ltd, 1st Edition, 2004.
3. **Rajesh Narang,** *Database Management Systems*, Prentice Hall of India, 3rd Edition 2004.
4. **C.J.DATE,** *An Introduction To Database System*, Addition Wesley Publications, Seventh Edition.

Instructional Hrs: 90   **Sub.Code: 16CSPC206**

Max.Marks: CIA-25; ESS-75   **Credits: 5**

Objective: To make the students understand the advanced concepts of JAVA.

UNIT I   **18 Hrs.**

 A Closer Look at Methods and Classes : Overloading Methods - Overloading Constructors - Using Objects as Parameters - Argument Passing- Returning Objects - Recursion - Introducing Access Control. **Inheritance** : Inheritance Basics - Using super - Creating a Multilevel Hierarchy - Method Overriding - Dynamic Method Dispatch - *Using Abstract Classes* - Using final with Inheritance. **Packages.**

UNIT II   **18 Hrs.**

 Interfaces : Defining an Interface - Implementing Interfaces - Nested Interfaces - Applying Interfaces- Variables in Interfaces - Interfaces Can Be Extended. **Multithreaded Programming :** The Java Thread Model - The Main Thread - Creating a Thread - Creating Multiple Threads - Thread Priorities. **Synchronization :** Using Synchronized Methods - The synchronized Statement - Interthread Communication - Suspending, Resuming, and Stopping Threads - Using Multithreading. *I/O Basics.*

UNIT III   **18 Hrs.**

 The Applet Class : Two Types of Applets - Applet Basics - Applet Architecture - An Applet Skeleton - Simple Applet Display Methods - Requesting Repainting - Using the Status Window. **Event Handling. Introducing the AWT: Working with Windows, Graphics, and Text :** AWT Classes - Window Fundamentals - Working with Frame Windows - Creating a Frame Window in an Applet. Working with Graphics - *Working with Color - Setting the Paint Mode - Working with Fonts* - Managing Text Output Using Font Metrics.

UNIT IV   **18 Hrs.**

Using AWT Controls, Layout Managers, and Menus : Control Fundamentals - Labels - Using Buttons - Applying Check Boxes – Checkbox Group - Choice Controls - Using Lists - *Managing Scroll Bars - Using a TextField - Using a TextArea*. Understanding Layout Managers. Menu Bars and Menus, Dialog Boxes. **Introducing Swing :** The Origins of Swing - Swing Is Built on the AWT - Two Key Swing Features - The MVC Connection - Components and Containers - The Swing Packages. **Java Beans.**

UNIT V   **18 Hrs.**

Servlets: The lifecycle of a Servlet – Using Tomcat for servlet development– A Simple Servlet – The Servlet API – The Javax.Servlet Package – Reading servlets Parameters.The javax.servlet.http package – Handling HTTP requests and responses – Using cookies. Database Access with JDBC: JDBC Architecture – Accessing a DataBase – Sample JDBC Servlet.

Note: Self study topics are denoted in *Italics*

TEXT BOOKS

1. **Herbert Schildt**, *The complete Reference Java*. TMH New Delhi, Seventh Edition, Eleventh Reprint, 2010. (Unit I to IV)

2. **Dustin R.Gallaway***, Inside Servlets server side programming for the Java Platform*, Pearson Edition, 2009. (Unit V)

REFERENCE BOOKS

1. **Herbert Schildt,** *Swing a Beginners Guide*, TMH Edition, Second Reprint 2009.

2. **R.Krishnamoorthy, S.Prabhu**, *Internet and Java Programming*, New Age International Private Ltd., NewDelhi, 2009.

3. **M.P.Bhave & S.A.Patekar**, *Programming with Java*, Pearson Education, First Edition, 2009.

DIGITAL IMAGE PROCESSING

Instructional Hrs: 90   **Sub.Code: 16CSPC207**

Max.Marks: CIA-25; ESE-75   **Credits: 5**

Objective : To make the students understand the basic concepts of digital image
processing.

UNIT I   18 Hrs.

Introduction: What is Digital Image Processing – the origin of DIP – Examples of fields that use DIP – Fundamentals Steps in DIP – Components of an Image Processing System. **Digital Image Fundamentals:** Elements of Visual Perception – Light and the Electromagnetic Spectrum – Image Sensing and Aacquisition – Image Sampling and Quantization – *Some Basic Relationship Between Pixels* – Linear& Nonlinear Operations.

UNIT II   18 Hrs.

Intensity Transformations and Spatial Filtering: Background – Some Basic Intensity Transformations Functions – Histogram Processing – Fundamentals of Spatial Filtering – Smoothing Spatial Filters – Sharpening Spatial Filters – Combining Spatial Enhancement Methods.

UNIT III   18 Hrs.

Image Restoration: A Model of the Image Degradation / Restoration Process – Noise Models – Restoration is the Process of Noise only – Spatial Filtering – Periodic Noise Reduction by Frequency Domain Filtering – Linear, Portion – Invariant Degradations – Estimating the Degradation Function – Inverse Filtering– Geometric Mean Filter.

UNIT IV 18 Hrs.

Image Compression: Fundamentals. **Some Basic Compression Methods**: Huffman Coding – Arithmetic Coding – LZW Coding.**Patterns and Pattern Classes**- Recognition Based on Decision-Theoretic Methods- Structural Methods

UNIT V 18 Hrs.

Image Segmentation: Fundamentals – Point, Line, Edge Detection – Thresholding – Region – Based Segmentation – Segmentation by Morphological Watersheds.

Note: Self study topics are denoted in *Italics*

TEXT BOOK

1. **Rafael C. Gonzalez, Richard E. Woods**, *Digital Image Processing*, PHI / Pearson Education, New Delhi, Third Edition, 2012.

REFERENCE BOOKS

1. **Chanda B, Dutta Majumder D**, *Digital Image Processing and Analysis*, PHI, New Delhi, 2003.
2. **Nick Efford**, *Digital Image Processing a practical introducing using Java,* Pearson Education, New Delhi, 2004.

SEMESTER -II
Practical II
ADVANCED JAVA LAB

Instructional Hrs: 75   **Sub.Code: 16CSPCP02**

Max. Marks: CIA -40; ESE -60   **Credits: 3**

Objective: To make the students understand the concepts of JAVA

Program using following Concepts:

1. Classes and objects
2. Inheritance
3. Packages
4. Interfaces
5. Multithreading
6. Applets
7. AWT controls
8. Event Handling
9. Menu
10. Layout Managers
11. Swing Controls and Trees
12. JDBC

DIGITAL IMAGE PROCESSING LAB

Instructional Hrs: 75   **Sub.Code: 16CSPCP03**

Max.Marks: CIA-40; ESE-60   **Credits: 3**

Objective: To make the students understand the concepts of Digital Image Processing using MATLAB.

1. Image Enhancement (Contrast manipulation, Histogram Equalization, Gray-level Slices, Threshold operation).
2. Filtering Techniques-Spatial Technique
3. Edge Detection.
4. Binary Image Processing (Morphological Operations)
5. Color Image Processing
6. Segmentation
7. Classification
8. Image Descriptor Computation

Core Paper - XIV

ASP.NET PROGRAMMING

Instructional Hrs: 60   **Sub Code: 16CSPC309/**
                                                                      16CAPC514

Max.Marks: CIA-25; ESS-75   **Credits: 4**

Objective: To understand the structure of .NET Framework and to gain the practical working
        knowledge of the ASP.NET.

UNIT I   **12Hrs.**

Getting Started with .NET Framework 4.0 – Introducing Visual Studio 2010 : Exploring the
Visual Studio 2010 IDE – Performing basic IDE operation – Introducing C# 2010 – Flow
Control.

Unit II   **12Hrs.**

.NET and SQL Server – Data Access with ADO.NET

UNIT III   **12Hrs.**

ASP.NET 4.0 Essentials – Developing a Web Application

UNIT IV   **12Hrs.**

Application Structure and State – Web Forms : Standard Controls

UNIT V   **12Hrs.**

Validation Controls – Working with Database Controls : The SqlDataSource Control – The
AccessDataSource Control – The XmlDataSource Control – The GridView Control – The
DataList Control – The FormView Control - The Chart Control.

Note: Self study topics are denoted in *Italics*

TEXT BOOK

Kogent Learning Solutions Inc.,*.NET 4.0 Programming (6-in-1) Black Book*, DreamTech Press, Edition 2011.

REFERENCE BOOKS

1. **Mattnew MacDonald** ,*Beginning ASP.NET 2.0 in VB 2005*, APress, First Indian Reprint 2006.

2. **Adam Freeman** , *Applied ASP.NET 4 in Context*, APress, First Indian Reprint 2012.

SEMESTER V
Practical – IX
ASP.NET PROGRAMMING LAB

Instructional Hrs. : 75   **Sub. Code : 16CSPCP04/**
                                                                16CAPCP09

Max. Marks : CIA -40; ESE -60   **Credits: 3**

Objective : To implement the ASP .NET database programming.

1. Develop a web application containing the following controls: ListBox , Button, Image, Label. The listbox is used to list items available in a store. When the user clicks on an item in the listbox, its image is displayed in the image control. When the user clicks the button, the cost of the selected item is displayed in the Label control.

2. Develop a web application for Arithmetic calculator.

3. Develop a web application to demonstrate CSS and Hyper link control.

4. Develop a web application that gets user input such as the student name, course and major. After the user enters the appropriate values the Validation button must validates the values entered using validation controls.

5. Develop an ASP.net web page to upload an image and load it within same page. Repeat for multiple image upload and display all in the same page.

6. Develop an ASP.net Custom Control (User Control) to be used by multiple pages within web application.

7. Develop a web application to demonstrate Dataset, DataReader controls.

8. Develop a web application using Data List, DataGridView Controls.

9. Develop a web application using Chart Control.

10. Design login page using user authentication from database(password & user name