

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title :** Core- Object Oriented Programming With C ++      **Subject Code:** 16PCA1C01

**Year :** I

**Semester :** I

**5 Hours/Week**

**5 Credits**

**Unit - I**

**Principles of Object Oriented Programming –** Software Evaluation – OOP Paradigm – Basic concepts of OOP – Benefits of OOP – Object Oriented languages – Applications of OOP. **Pages :( 1-14)**

**Unit - II**

**Introduction to C++ -** C++ Data types – Token, Keywords, Identifiers, Variables, Operators, Manipulators, Expressions and Control structures in C++, Functions in C++, Main function & Function Prototyping – Call by Reference – Call by Value – Return by Reference – Return by Value – Inline Functions – Friends Functions & Classes. **Pages :( 35-90)**

**Unit - III**

**Classes and Objects: Constructors and Destructors and Operator Overloading and type conversions.****Pages:(96-187)**

**Unit - IV**

**Inheritance: Single Inheritance-Multilevel Inheritance –Multiple Inheritance – Hierarchical Inheritance – Hybrid Inheritance. Pointer – Virtual functions and Polymorphism – Managing console I/O operations.****Pages:(201-281)**

**Unit - V**

**Working with Files:** Classes for file stream operations – opening and closing file-End-file detection-File pointers-updating a File error handling during file Operations- Command-line arguments.**Pages:(323-350)**      **Templates and Exception Handling:** Class Templates-Function Templates – Member Function Templates- Type Template Arguments – Non Type Template type arguments – Exception Handling.**Pages:(359-374)**

**TEXT BOOK:**

1. E.Balagurusamy, "Object Oriented Programming with C++", 2<sup>nd</sup> Edition, Tata McGraw Hill Publication , 2002.

**REFERENCE BOOK:**

1. Herbert Schildt," C++ FROM THE GROUND UP " Osborne MGH , 2002.
2. Yashant Kanetkar , "C++" ,2002.
3. Herbert Schildt,"C++ The Complete Reference",Osborne MGH, 2003.
4. www.spoken-tutorial.org.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title :** Core - Data Structures using C++

**Subject Code:** 16PCA1C02

**Year :** I

**Semester :** I

**5 Hours/Week**

**5 Credits**

**Unit - I**

**Arrays: Concepts** – Ordered List – Sparse Matrices- representation of arrays. Stack and Queues: Fundamentals – a mazing problem - evaluation of expressions– Multiple Stacks and Queues.

**[Pages: 40 –**

**100]**

**Unit - II**

**Linked Lists: Singly Linked List - Linked Stacks and Queues - The storage pool - Polynomial addition-More on linked lists - Equivalence relations - Spares Matrices. Doubly Linked Lists and dynamic storage management: Doubly linked lists - Dynamic Storage Management –Generalized list - Garbage Collection and Compaction.**

**[Pages: 106 - 182]**

**Unit - III**

**Trees: Basic Terminology - Binary Trees - Binary Tree Representations - Binary Tree Traversal –More on binary trees - Threaded Binary Trees – Binary Tree representation of trees - Application of Trees: Set representation – Decision trees.**

**[Page No: 218 - 259]**

**Graphs: Terminology and Representations – Traversal - Connected Components and Spanning Trees - Shortest Paths – Transitive Closure.**

**[Page**

**No: 282 - 309]**

**Unit - IV**

**Internal sorting: Insertion Sort – Quick sort – Merge Sort - Heaps sort. [Page No: 335 - 359]** External

Sorting: Storage Devices - Sorting with Disks – Sorting with Tapes.[**Page No: 382 - 419]**

Symbol tables: Static Tree tables – Dynamic Tree Tables – Hash Tables. [**Page No: 422 - 469]**

**Unit - V**

**Files: Files, Queries & sequential Organizations. Index Techniques: Cylinder-Surface Indexing – Hashed Indexes – Tree Indexing – B trees. File Organizations: Sequential Organization (ISAM)- Random File Organization – Linked Organization –Inverted Files – Cellular Partitions – Storage Management.**

**[Page No: 478 - 535]**

**TEXT BOOKS:**

1. Ellis Horowitz & Sartaj Sahani ,” Fundamentals of Data Structures”, Galgotia Book source, 2002.

**REFERENCE BOOK:**

1. Tremblay & Sorenson “An Introduction to Data structures with Applications”, 2nd Edition, Tata Mc\_Graw Hill Company, 2002.
2. Robert Sedgewick “Algorithms in C” Addison Wesley, 2001.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title - Core:** Relational Database Management Systems **Subject Code** 16PCA1C03

**Year :** I

**Semester :** II

**4 Hours/Week**

**4 Credits**

**Unit - I**

Introduction to Database Systems - Purpose of Database Systems - View of Data - Data Models - Database Languages - Transaction Management - Storage Management - Database Administrator - Database Users – Overall System Structure. (1-21)

Entity-Relationship Model - Basic Concepts - Design Issues - Mapping Constraints - Keys - Entity Relationship Diagram - Weak Entity Sets - Design of an E-R Database Schema - Reduction of an E-R Schema to Tables. (27-68)

**Unit - II**

Relational Model - Structure of Relational Databases - The Relational Algebra - The Relational Calculus - Extended Relational Algebra Operations -Modification of the Database - Views. (79-125)

Relational Database Design - Pitfalls in Relational Database Design- Decomposition - Normalization Using Functional Dependencies - Normalization Using Multi valued Dependencies - Normalization Using Join Dependencies. (257-293)

**Unit - III**

Distributed Database Systems: Introduction (1-23) – Distributed DBMS Architecture: DBMS standardization – Architectural Models fro Distributed DBMS’s – Distributed DBMS Architecture (75-96) - Distributed Database Design: Distribution Design Issues (107-111) – Query Decomposition and Data Localization(203-223) – Introduction to Transaction Management.(274-296)

**Unit - IV**

Object-Oriented Databases - The Object-Oriented Data Model - Object-Oriented Languages - Persistent Programming Languages - Persistent C++ Systems.(307—330)

Object-Relational Databases - Nested Relations - Complex Types and Object Orientation - Querying with Complex Types - Creation of Complex Values and Objects - Comparison of Object-Oriented and Object-Relational Databases.(335-357)

**Unit - V**

ORACLE 9i – Introduction - oracle data types – Create table command- Viewing data in tables – Eliminating Duplicate rows , Sorting data, Create a table from a table, delete operations - Update, Modify ,Rename, Truncate, Destroying tables(113-130) – Oracle Functions: Aggregate functions (Group)- Single Row functions (Scalar): String , Numeric , Conversion, Date Functions (169 – 182) – sub queries (198-208)– indexes – views - clusters– sequences (239-247 , 251-261)

Introduction to PL/SQL – PL/SQL Block – Control structures(320-332) – Cursors(336-345) – Exception handling(369-376)– Procedures, Functions, Database Triggers, Types of Triggers(379-387, 403-411)

**Text Books:**

1. A.Silberschatz, H.Korth and S.Sudarsan," Database System Concepts",4<sup>th</sup>Edition,TATA McGraw Hill Inc., 2002 (UNIT I, II & IV).
2. M.Tamer Ozsü Patrick Valduriez, "Distributed database Systems",2<sup>nd</sup> Edition , Pearl Education, 1999(Unit III).
3. Ivan Bayross,"SQL,PL/SQL The Programming Language of Oracle"3<sup>rd</sup> EditionBPB Publications, 2007. (Unit V)

**Reference Books:**

1. Bipin.C.Desai," An Introduction to Databse System",West Publishing Company , 2002.
2. C.J.Date," An Introduction to Database Systems",Addision-Wesley,2002.
3. Raghu Ramakrishnan,"Database Management System", McGraw Hill Inc.,2000.
4. R. Elmasri and S.B.Navathe,"Fundamentals of Database Systems"The Benjamin Cummings publishing Company Inc, 2002.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title:** Core Practical: C++ Programming

**Subject Code:** 16PCA1CP1

**Year :** I

**Semester :** II

**4 Hours/Week**

**2 Credits**

1. Write a C++ program for Conversion of 1D array into all possible 2D array.
2. Write a C++ program to express a given number as a product of primes.
3. Write a C++ program to find the maximum and minimum element in each of a m\*n matrix and its position.
4. Write a C++ program for matrices multiplication, addition and subtraction.
5. Write a C++ program for multiplying to Matrices and multiplying a matrix with a constant using function overloading.
6. Write a C++ program for complex numbers arithmetic using functions.
7. Write a C++ program for complex numbers arithmetic using operator overloading.
8. Write a C++ program to convert the given 2 set of times calculated as day, hour, minutes and seconds.
9. Write a C++ program to count number of working days with day and dates in calendar.
10. Write a C++ program for Binary Search.
11. Write a C++ program for Correlation.
12. Write a C++ program for Regression.
13. Write a C++ program for Variance, Standard and Mean Deviations.
14. Write a C++ program for String concatenation using Dynamic Constructors
15. Write a C++ program to add two polynomials.
16. Write a C++ program to multiply to polynomials.
17. Write a C++ program for Sorting using Templates.
18. Write a C++ program for Count Vowels, constants, numbers and special characters in a given file.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
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**Course : MCA**

**Course Title : Core Practical: Data Structures using C++  
Year : I**

**Subject Code: 16PCA1CP2  
Semester : I**

**4 Hours/Week**

**2 Credits**

1. Implementation of Arrays
  - Polynomial addition
  - Magic Square
2. Stack operation (PUSH & POP)
3. Application of Stack
  - Evaluation of Expression
  - Infix to postfix
4. Queue operation (ADD & DELETE)
5. Circular queue (ADD & DELETE)
6. Single linked list (CREATION,ADD,DELETE,SEARCH,SORT)
7. Circular linked list
8. Dynamic circular linked list
9. Tree (CREATION,ADD,DELETE,SEARCH)
10. Tree Traversals(apply infix, postfix, prefix)
11. Binary trees(CREATION,ADD,DELETE,SEARCH)
12. Searching(Sequential search, Binary search)
13. Sorting(Insertion sort, Bubble sort, quick sort, merge sort heap sort)

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
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**Course :** MCA

**Course Title :** Core Practical: Relational Database Management System

**Subject Code:** 16PCA1CP3

**Year :** I

**Semester :** I

**4 Hours/Week**

**2 Credits**

**Create the following Tables:**

LOCATION		JOB		DEPARTMENT		
Location_ID	Regional_Group	Job_ID	Function	Department_ID	Name	Location_ID
122	NEW YORK	667	CLERK	10	ACCOUNTING	122
123	DALLAS	668	STAFF	20	RESEARCH	124
124	CHICAGO	669	ANALYST	30	SALES	123
167	BOSTON	670	SALESPERSON	40	OPERATIONS	167
		671	MANAGER			
		672	PRESIDENT			

EMPLOYEE									
EMPLOYEE_ID	LAST_NAME	FIRST_NAME	MIDDLE_NAME	JOB_ID	MANAGER_ID	HIREDATE	SALARY	COMM	DEPARTMENT_ID
7369	SMITH	JOHN	Q	667	7902	17-DEC-84	800	NULL	20
7499	ALLEN	KEVIN	J	670	7698	20-FEB-85	1600	300	30
7505	DOYLE	JEAN	K	671	7839	04-APR-85	2850	NULL	30
7506	DENNIS	LYNN	S	671	7839	15-MAY-85	2750	NULL	30
7507	BAKER	LESLIE	D	671	7839	10-JUN-85	2200	NULL	40
7521	WARK	CYNTHIA	D	670	7698	22-FEB-85	1250	500	30

**Queries based on the above tables:**

**Order By Clause:**

1. List out the employee id, last name in ascending order based on the employee id.
2. List out the employee id, name in descending order based on salary column
3. list out the employee details according to their last\_name in ascending order and salaries in descending order
4. list out the employee details according to their last\_name in ascending order and then on department\_id in descending order.

**Group By & Having Clause:**

5. **How many employees who are** working in different departments wise in the organization

6. List out the department wise maximum salary, minimum salary, average salary of the employees
7. List out the job wise maximum salary, minimum salary, average salaries of the employees.
8. List out the no.of employees joined in every month in ascending order.
9. List out the no.of employees for each month and year, in the ascending order based on the year, month.
10. List out the department id having atleast four employees.
11. How many employees in January month.
12. How many employees who are joined in January or September month.
13. How many employees who are joined in 1985.
14. How many employees joined each month in 1985.
15. How many employees who are joined in March 1985.
16. Which is the department id, having greater than or equal to 3 employees joined in April 1985.

#### **Simple join**

17. How many employees who are working in sales department.
18. Which is the department having greater than or equal to 5 employees and display the department names in ascending order.
20. How many jobs in the organization with designations.

21. How many employees working in "New York".

#### **Non – Equi Join:**

22. Display employee details with salary grades.
23. List out the no. of employees on grade wise.
24. Display the employ salary grades and no. of employees between 2000 to 5000 range of salary.

#### **Self Join:**

25. Display the employee details with their manager names.
26. Display the employee details who earn more than their managers salaries.
27. Show the no. of employees working under every manager.

#### **Outer Join:**

28. Display employee details with all departments.
29. Display all employees in sales or operation departments.

30. Create a table named PASSENGER with the fields Ticket\_number (Primary key), name, age, sex and fare. Rite a PL/SQL procedure to print the details of all the passengers

1. Create a Trigger to update quantity on hand in the product table when product has been sold. The product table contains the following fields PNO, Pname, PQOH. The Sales Table contains the following fields SNO, PNO, SQTY and SDATE.



**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
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Course : MCA

Course Title : Core : Visual Programming (. Net)      Subject Code: 16PCA2C05

Year : I

Semester : II

5 Hours/Week

5 Credits

**Unit - I**

**Getting Started with Visual Basic 2010:** Exploring the integrated development Environment (3–13) - Creating Your First VB Application (13-21) - Understanding the IDE Components (21-29) - **Handling Data:** Variables (37-60) - Variables as Objects (60-74) – Constants (74) – Arrays (75-82).

**Unit - II**

**Visual Basic Programming Essentials:** Flow-Control Statements (85-102) - Writing and Using Procedures (102-106) – Arguments (106-110) - **Basic Windows Controls:** The TextBox Control (161-182) - The ListBox, CheckedListBox, and ComboBox Controls (182-197) - The ScrollBar and TrackBar Controls (197-200) - **Working with Forms:** The Appearance of Forms (203-242) - Designing Menus (243-251)- **More Windows Controls:** The Common Dialog Controls (254-269) - The RichTextBox Control (269-286)- The TreeView and ListView Controls(286-300).

**Unit - III**

**Working with Custom Classes and Controls:** What Is a Class? (306-308) - Building the Minimal Class (308-346) - Operator Overloading (347-352) - **Applied Object-Oriented Programming:** Issues in Object-Oriented Programming (387-400) – Inheritance (400- 407) - Extension Methods (407-411) – Polymorphism (411-417) - Who Can Inherit What? (418-429)

**Unit - IV**

**Working with the .NET Framework:** What Is the Framework? (422-434) - Using Snippets (434-440) - The IO Namespace (440-446) - Drawing and Painting (446-454) - The Image Class (454-455) – Printing (455-460) - Handling Strings and Characters (463-475) - Handling Dates and Time (476-490) - **Storing Data in Collections:** Collection Types (500-510) - The Dictionary Collection (510-512) - The Hash Table Collection (512-517) - The Sorted List Collection (518-519) - Other Collections (519-527)

**Unit - V**

**Programming with ADO.NET:** The Basic Data-Access Classes (662-684) - **Developing Data-Driven Applications:** Storing Data in Datasets (701-714) – Using the Entity Data Model (726-767).

**TEXT BOOK:**

1. Evangelos petroustes," Mastering Microsoft Visual Basic 2010 ", Wiley-Dream Tech, 5<sup>th</sup> Edition, 2001.

**REFERENCE BOOKS:**

1. Evangelos petroustes," Mastering Visual basic.NET",BPB, First Edition, 2002.
2. Kuljit Kaur, Pooja Bembey,"Visual Basic.NET professional projects", Prentice Hall of India pvt. Ltd,2002.
3. [www.spoken-tutorial.org](http://www.spoken-tutorial.org).

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title :** Core : Computer Network  
**Year :** I

**Subject Code:** 16PCA2C06  
**Semester :** II

**5 Hours/Week**

**5 Credits**

**Unit - I**

**Introduction:** Uses of computer networks - Network hardware - Network software - The OSI Reference model (1 - 41) – Example networks. (49 - 71). **Physical Layer:** Guided Transmission Media: Magnetic Media - Twisted pair - Coaxial cable - Fiber optics. (90 - 99). Wireless Transmission: The Electromagnetic spectrum – Radio transmission – Microwave transmission – Infrared and Millimeter waves – Light wave transmission. (100 - 108). The Mobile Telephone system. (152 - 169).

**Data link Layer :** Data link Layer Design Issues : Services Provided to Network Layer - Framing - Error control - flow control - Error Detection and Correction : Error Correcting Codes - Error Detecting Codes - Elementary Data link Protocols : An Unrestricted Simplex Protocol - A Simplex Stop and Wait Protocol - A Simplex Protocol for a noisy Channel. (183 - 211).

**Unit - II**

**Network Layer: Network** Layer Design Issues - Services provided to the Transport Layer. (343 -345).

**Routing Algorithm:** The Optimality Principle - Shortest path routing – Flooding. (350 -357). Hierarchical routing - Broadcast routing- Multicast routing. (366 -372)

Congestion Control Algorithms : General Principles of Congestion Control - Congestion Prevention Policies – Congestion control in Datagram subnets – Load shedding – Jitter Control. (384 - 396). **Transport Layer:** The Transport Service: Services provided to the Upper layers - Transport Service Primitives. (481 - 486). Elements of Transport Protocols: Addressing – Connection Establishment – Connection Release - Flow Control and Buffering – Multiplexing - Crash Recovery. (492 -513).

**Unit – III**

Introduction to Ethernet –Ethernet sublayer – MAC address structure(255-258)-Ethernet Frame Structure – Frame Fields (262-265)- Ethernet transmission (271) - Collision domain and Broadcast domain-layer 2 broadcaste - network segment (290-303)-Application Layer : Protocols(377-378) – IP Address- Decimal to Binary conversion- IP Address Classes- Reserved IP Addresses – Public and Private address –Introduction to subnetting – Ipv6-ARP (386-411)

**Unit -IV**

**WAN Device-** WAN Standard (515-517) - Router startup sequence system configuration dialog –setting up global parameter (554-559)- Hyper terminal –logging into the router –help function – editing command –command History - ( 563-573)-Router configuration – configuration modes – configuring a router name – configuring interface (587-573)- Backup – password Recovery (607-613) -Static Routing - default routing – verify and troubleshoot static routing -dynamic routing (681 -704).

## **Unit - V**

**RIP Features-** IP Classless command – RIP Configuration –Verifying and Troubleshooting RIP- load balancing with RIP (729-741)- configuring IGRP –Troubleshooting IGRP (744-753)- ICMP-Error report and Correction –Unreachable networks-ICMP Message Format (762-772)-ACL – Create ACL – Wild Card Mask – Standard and Extended ACL –Named ACL –Firewall – Using ACL with Firewall –Restricting Virtual Terminal Access –Verifying A CL (841-871)

### **Text Book:**

1. Andrew S Tanenbaum “ Computer Networks”, Prentice Hall of India, 4th Edition 2006.
2. CCNA 1 and 2 Companion guide, year 2003 , “Cisco Networking Academy “ Pearson Education (UNIT III,IV,V)

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
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**Course :** MCA

**Course Title :** Core :Software Engineering  
**Year :** I

**Subject Code:** 16PCA2C07  
**Semester :** II

**4 Hours/Week**

**4 Credits**

**Unit - I**

The Evolving role of software – software – Legacy software – software Myths (34-47) – Software Engineering - A Layered Technology – A process framework – Personal and Team process Models (53-71).

**Unit - II**

**Linear sequential Models** – Software Process Model – Evolutionary Process Model (77-88) – Computer Based System – The System Engineering Hierarchy – System Modeling. (155-161 &164-170)

**Unit - III**

Requirement Engineering Tasks (176-180) – Developing Use-Cases – Building the analysis Model - Negotiating Requirements – Validating Requirements (191-204) Requirement Analysis – Data Modeling Concepts – Object Oriented Analysis (208-218).

**Unit - IV**

Design Concepts – The Design Model - Pattern Based software design (259-282)– Architectural styles and Patterns – **Architectural Design – Mapping Dataflow into a software architecture (291-320).**

**Unit - V**

A Strategic Approach to software Testing (387-393) – The strategies for conventional software (394-404) – Validation Testing – System Testing (406-411) – Software Testing Fundamentals – Basis Path Testing – control structure testing - Block Box Testing-Case studies (421-442)

**TEXT BOOKS:**

1. Roger S.Pressman”Software Engineering A Practitioner’s Approach “,6<sup>th</sup> Edition.

**REFERENCE BOOKS:**

1. Peter A.N.G.& Reymond T. Yen ,”Modern Software Engineering”, Van Nostrand,1990.
2. Staff, Ted J.Alan J.PAulim ,”Software Reusability”, Acadmic press, 1989.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title:** Core :Multimedia -I ( Photoshop and Illustrator )

**Subject Code:** 16PCA2C08

**Year :** I

**Semester :** II

**4 Hours/Week**

**4 Credits**

**Unit - I**

**Photoshop:** Using the Photoshop Workspace (14-38), Navigating in Photoshop (42-49), Customizing the Interface and the Photoshop (51-73), Image Management, Opening, Duplicating and Saving Images (75-88), Saving an image to disk, File Format Roundup (122-150), Resampling and cropping, Using the analysis menu Tools, Creating Custom actions (153-178).

**Unit - II**

**PAINTING AND RETOUCHING** – Working in Different Color Modes (188-203), Basic Techniques, Brush Size and Shape (235 – 254), Filling and Stroking (279 – 309), Cloning and Healing (316 -334), Retouching and Restoring Photographs (335 – 349). Selections, Masks, and Filters – Magnetic Selections Tools (357 – 375), Quick Mask Mode – Generating Masks Automatically (419 – 453), Looking at Filters – How Filters Work – Fading a Filter –Heightening Focus and Contrast - Blurring an Image – Understanding Noise Factors (459 – 526).

**Unit - III**

**LAYERS, OBJECTS, AND TEXT:** - Working with layers – Layer Basics – Creating and using Smart Objects – Applying Transformations – Masking and Layers (641 – 704), Blend Modes – Advanced Blending Options (726 – 753), Shapes and Styles(777 – 814), Mapping and Adjusting colors – Color Effects and Adjustments – Automatic Color effects and Corrections – Adjusting Hues and Colorizing Images – Making Custom Brightness Adjustments – Adjustments Layers (889 – 951), Printing and Publishing with Photoshop – Printing Composites – Optimizing Images for Web Publication – Web Graphic Format – Slicing and Dicing an Image – Publishing from the Bridge – Batch Processing (999 – 1066)

**Unit - IV**

**Illustrator:** Working with Illustrator’s interface – Navigating Around Your Document – Using Illustrator’s Modes – Using the Edit Commands (11-40), Setting Up a New Document - Modifying the Setup of a Document – Artboards - Opening and Closing Illustrator Files - Saving Files – Export Command (41 – 61), Understanding Drawing and Painting Techniques - Working with Paths - Drawing Paths with Illustrator Tools (69 – 116), Making Basic Shapes - Working with the Flare Tool - Filling and Stroking Shapes - Creating Shapes with the Shape Builder Tool - Using Symbols (119 – 161), Working with the Swatches Panel - Using Transparency - Creating Gradients - Adding Realism with Mesh (211 – 247).

## Unit - V

Using Illustrator to Organize Objects - Understanding Object Stacking Order - Creating and Deconstructing Groups - Layering Your Artwork - Working with Templates in Illustrator - Working with Grids - Using Guides - Measuring for Printing (251 – 289) - Working with Type - Understanding Fonts - Understanding Basic Type Menu Commands - Using the Type Tools - Creating Individual Type - Working with Type Areas - Creating Area Type - Using the Type Panels - Using Advanced Type Functions - Creating Outlines (293 – 345), Adding a Transformation with Tools - Working with the Transform Panel (371 – 384) Working with Graphic Styles and Effects – Using Effects (491 – 514), Creating Web Graphics – the basics - Optimizing and Saving Web Graphics - Creating Vector Graphics for the Web - Understanding Web Slicing - Object-Based Web Slicing - Understanding CSS layers (595 – 625).

### **TEXT BOOKS:**

1. Laurie Ulrich Fuller & Robert C.Fuller ,”Adobe Photoshop CS3”, Bible, 2009
2. Ted Alspach ,” Adobe Illustrator CS5”, Bible, 2010
3. Adobe Press” Adobe Photoshop CS5”, Classroom in a Book ,2010.
4. Adobe Press “ Adobe Illustrator CS5 “,Classroom in a Book, 2010.

### **REFERENCE BOOKS:**

1. Scott Kelby “The Adobe Photoshop CS5 Book for Digital Photographers “,
2. Adobe Press “ Adobe Photoshop CS4 Classroom in a Book”,2010.
3. Adobe Creative Team “ Adobe Photoshop CS3 Classroom in a Book”2010.
4. [www.spoken-tutorial.org](http://www.spoken-tutorial.org).

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title:** Core Practical: Visual Programming (.Net) **Subject Code:** 16PCA2CP4  
**Year:** I **Semester:** II

**4 Hours/Week**

**2 Credits**

1. Write a Vb.Net program to Calculating Square Roots with Improved Accuracy, Converting Integer Numeric Data to Binary, and Multiplying Matrices
2. Write a Vb.Net program to Calculating the Greatest Common Divisor of Two Integers by Using Euclid's Algorithm, comparing the Efficiency of Two Algorithms and displaying Results Graphically
3. Write a Vb.Net program Building a Simple File Editor
4. Write a Vb.Net program Controlling Visibility of Type Members, Sharing Methods and Data.
5. Write a Vb.Net program to Hiding Data Members, using Shared Members to Share Data, Implementing an Extension Method
6. Write a Vb.Net program defining an Interface, Implementing an Interface and creating an Abstract Class
7. Write a vb.net program Defining the Matrix and MatrixNotCompatibleException Types, implementing Operators for the Matrix Type and Testing the Operators for the Matrix Type
8. Write a vb.net program Defining a Generic Interface, implementing a Generic Interface, Implementing a Test Harness for the BinaryTree Project, implementing a Generic Method
9. Write a vb.net program Using the LINQ Query Operators, building Dynamic LINQ Queries
10. Write a vb.net program to create an MS Access Databases Queries Editor
11. Write a vb.net program to create a Cartoonizer - Convert Photos into Cartoon Like Images
12. Write a vb.net program to create a program for Decrypting Images
13. Write a vb.net program for Setting and retrieving a Dataset in a Hashtable
14. Write a vb.net program to implement Serialization to Persist TreeView Control
15. Write a vb.net program to create a Windows service.
16. Write a vb.net program to create a Drop-Down Calculator
17. Write a program to illustrate Multithreading with VB.NET
18. Write a program to perform Word Automation using VB.NET



**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
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**Course:** MCA

**Course Title:** Core Practical :Multimedia ( Photoshop and Illustrator)

**Subject Code:** 16PCA2CP5

**Year:** I

**Semester:** II

**4 Hours/Week**

**2 Credits**

**PHOTOSHOP LAB**

1. Design a Wedding card with suitable background.
2. Merge the Two different images using the Morphing techniques.
3. Design the particle Environment with suitable objects.
4. Import the Water image and apply the filter effect.
5. By using the Filter effect apply the wind effect.
6. Design your University logo with suitable colors.
7. Design your University infra structure with hills background.
8. Creating borders with effects and textures.
9. Creating a night vision effect.
10. Extracting from background and creating a Shadow.

**ILLUSTRATOR LAB**

11. Ads by using tools alone [without using picture].
12. Brush work [usage of brush alone] e.g.: swirl works.
13. Making of iPod, mobiles [using 3d options].
14. Making flower pot & machines using [3d revolve].
15. Making screen saver using blend.
16. Final project [logo, envelope, cd, id, letter pad] professional look.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title:** Core : Windows Application Development with C#.NET

**Subject Code:** 16PCA3C01

**Year :** II

**Semester :** III

**5Hours/Week**

**4 Credits**

**Unit I**

Introduction (1-4) – Dive into Visual C# 2010 Express (11-38) – Introduction to C# Applications (40-63) – Introduction to Classes and Objects (66-93).

**Unit II**

Control Statements: Part I (94-118) – Control Statements: Part II (120-147) – Methods: A Deeper Look (149-185) – Arrays (187-231) – Garbage Collection and Destructors, Static Class Members (270-275) – Delegates, Lambda Expressions, Anonymous Types (291-298).

**Unit III**

Object Oriented Programming: Inheritance (300-331) – OOP: Polymorphism, Interfaces and Operator Overloading (332-371) – Exception Handling (372-398) - Introduction to LINQ and the List Collection (232-247) – Graphical User Interfaces with Windows Forms: Part 1 (399-440).

**Unit IV**

Graphical User Interfaces with Windows Forms: Part 2 (441-502) – Database and LINQ (584-619) – Generics (730-749) – Collections (751-778) – GUI with Windows Presentation Foundation (780-837).

**Unit V**

Data Access with .NETADO.NET Overview (685-687) – Using Database Connections (688-692) – Fast Data Access: The Data Reader – Managing Data and Relationships: The DataSet Class (701-714) – Populating a DataSet – Persisting DataSet Changes – Working with ADO.NET (721-733) – The DataGrid Control (735-749) – Data Binding – Visual Studio.Net and Data Access (750-769)

**TEXT BOOKS:**

1. Paul Deitel and Harvey Deitel, C# 2010 for Programmers, 4<sup>th</sup> Edition, Pearson, 2011. **(Unit I and IV)**
2. Simon Robinson, Christian Nagel, Karli Watson, Jay Glynn, Professional C#, 3<sup>rd</sup> Edition, Wrox Publisher, 2007. **(UNIT V)**

**REFERENCES BOOKS:**

1. Geetanjali Arora ,Balasubramaniam Aiswamy ,and Nitin Pandey, Microsoft C# Professional Projects, Prentice Hall of India Private Limited, 2002.
2. Herbert Schildt, C# 4.0 Complete References, 1<sup>st</sup> Edition, Tata McGraw-Hill, 2010.
3. <http://spoken-tutorial.org/>

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title:** Core: Open Source Application Development - Advanced Java-I

**Subject Code:** 17PCA3C02

**Year :** II

**4 Credits**

**Semester :** III

**5 Hours/Week**

**UNIT-I**

**An Overview of Java -Introducing Classes-Declaring Objects-Methods-Constructors - Inheritance-Packages and Interfaces-Exception Handling-Multithreaded-I/O Basics-String Handling:** String Constructors-Special String Operations-Character Extraction-String Comparison (Page-No: 109-121,161-242,413-420)

**UNIT-II**

**Networking Basics**-Networking Classes and Interfaces-InetAddress-TCP/IP Client Sockets-URL-Datagrams-**The Applet Class:** Applet Basics-Applet Skeleton-Requesting Repainting-HTML APPLET Tag-Passing Parameters to Applets- JDBC: Creating, deleting, updating the table by the console and Applet with AWT program(**Page No:727-742,747-763**)

**UNIT-III**

**Event Handling-Event** Classes-Window Fundamentals-Working with Frame Windows-Creating a Frame Window in an AWT-Graphics-Working with Color-Working with Fonts(**Page No:769-819**)

**UNIT-IV**

**AWT Control Fundamentals-Buttons-Check Boxes-Choice Controls-Lists-Managing Scroll Bars- TextField-Understanding Layout Managers- Images:**Image Fundamentals: Creating, Loading, and Displaying( Page No:833-855,885-887)

**Unit-V**

**Introducing GUI Programming with Swing:** Introducing Swing-Two Key Swing Features-Components and Containers-Painting in Swing-Exploring Swing- wing Buttons-Swing Menus-Create a Main Menu -**Introducing GUI Programming with JavaFX:** Introducing JavaFX GUI Programming-JavaFX Basic Concepts-Using Buttons and Events

(Page No:1021-1037,1041-1061,1105,1115)

**Text Book :**

1. Herbert Schildt “ The Complete Reference java”,9<sup>th</sup> Edition ,TATAMcGraw Hill, 2014 .

**Reference Books:**

1. Herbert Schildt “ The Complete Reference -java 2”5<sup>th</sup> Edition ,TATAMcGraw Hill,2002
2. [www.spoken-tutorial.org](http://www.spoken-tutorial.org).

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title:** Core: Operating Systems  
**Year :** II

**Subject Code:** 16PCA3C03  
**Semester :** III

**4 Hours/Week**

**4 Credits**

**Unit - I**

**Introduction – What is an Operating System? – Mainframe system : Batch Systems – Multiprogrammed Systems** - Time sharing Systems - Desktop systems – Multiprocessor Systems – Distributed Systems – Clustered Systems - Real Time Systems. (3 - 19).

**Computer System Structures:** Computer system operation - I/O structures.(27 -34) - Hardware protection (42 - 48).

**Operating-System Structures:** System components - Operating System components - operating system services - System Calls - System Programs - System Structure - Virtual Machines - System design and implementation. (55 - 88)

**Unit - II**

**Process Management: Processes:** Process concepts - process scheduling. (95 - 103) - Inter process communication (109 -117).

**Deadlocks:** Deadlock Characterization – Methods for handling Deadlocks – Deadlock prevention, Deadlock avoidance, Deadlock detection – Recovery from Deadlock. (243 - 266)

**Storage Management: Memory Management:** Introduction - Swapping – Contiguous Memory Allocation - Paging – Segmentation – Segmentation with Paging. (280 – 313).

**Virtual memory:** Demand paging (320 - 328) - Page replacement algorithm (330 - 344) – Thrashing (348 - 353).

**Unit - III**

**RHEL: RHEL** Variants- Open source- linux Origins-RedHat Distributions-Linux Principles (3-7) –Logging into linux system- Elements of the X Windows System-Starting the X server- Changing password- The Root User- Changing Identities-Editing text files (11-18)- Running Command-Help option (28-32)

**UNIT - IV**

**Linux file Hierarchy concepts-Important Directory- File and Directory names- Absolute and relative path names- Changing Directories –Listing Directories- Coping - removing files and Directories (48-59) - Users-Groups –Linux file security-permission type- changing file ownership**-changing permissions symbolic and numeric methods (74-83)- Creating Shell Script (102-105)

**UNIT - V**

**Introduction to vim- vim** basics-Opening a file in vim- modifying a file- Using Command Mode (163-169) – Search and replace- Undoing Changes-configuring **vi** and **vim** (171-177) - TCP/IP Network Configuration – Managing Ethernet connection- Network Configuration files - Printing in linux – Printing commands (191-200) – Crontab File Formate – Grouping Commands (266-227) –

User and Group ID numbers-Monitoring logins-Special permissions for Executables and Directories (321-329)- Hard Links-Symbolic link- Seven fundamental of file types-Checking Free Space-Removable media-CDs and DVDs-USB media-Archiving Files and Compressing archives- Creating Listing and extracting file archives (351-361)

**Textbooks:**

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne “Operating System Concepts”, Wiley India Edition, 2006.(Unit I &II).
2. RedHat Enterprise Linux Essentials (RH033) (Unit III,IV ,V)

**Reference Books:**

1. EVI Nemeth “Linux Administration hand Book ” Pearson Education 2003.
2. Neil Matthew “Professional Linux Programming “, A Press L.P ,2003
3. Richard L.Petersen “Linux Complete Reference “, 5th Edition, TATA McGraw-Hill Edition ,2003.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course : MCA**

**Course Title : Core Practical : Windows Application Development with C#.NET**

**Subject Code: 16PCA3CP1**

**Year : II**

**Semester : III**

**4 Hours/Week**

**3 Credits**

1. Write a C# Console Program to perform palindrome.
2. Write a C# Console Program to perform command line argument.
3. Write a C# Console Program to perform simple calculator.
4. Write a C# Console Program to perform string functions.
5. Write a C# Console Program to find second largest number.
6. Write a C# Console Program to jagged array.
7. Simple Math Calculator with Memory
8. Write a C# Program to create a calculator using textbox and buttons.
9. Create a MS Windows Notepad Application with Menus and ToolBar
10. Create a MS Windows Word Pad Application
11. Creating a Windows Explorer
12. Creating an Image List View based Album
13. Working with File Saving and Opening Features in Notepad
14. Write a C# program to create a sample inventory application for a hostel and store with Transactions
15. Write a C# program to create a sample application for student progress card
16. Write a C# program to create employee details with save, view, delete and modify option.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title:** Core Practical :Open Source Application Development with Advanced Java-I

**Subject Code:** 17PCA3CP2

**Year :** II

**Semester :** III

**4 Hours/Week**

**3 Credits**

1. Write a Java program to maintain the Stack by applying interface.
2. Write a Java program to Multiple Inheritance by using interface concept.
3. Write a Java program to get your name, age, class from one package and also get your college name address from other package in some other directory. To import these to packages into one main method.
4. Write a Java program to implement the Inheritance concept with suitable example by the Super class.
5. Write a Java program with one string message in one machine, to display this string to some other machine in the Java client program by the TCP/IP transmission in the Networking.
6. Write a Java applet program to create the table then adding and deleting the records to and from that table by JDBC
7. Develop a Java program for creating Menu containing various necessary items.
8. Write a applet program to display number of options but choose only one option and print that option by Item Listener.
9. Develop a Java program to create your details like name, age and class by using ActionListener and Text Area.
10. Write a Java program to image creating, loading, and displaying using applet
11. Write a Java swing program to handle an event in as swing program
12. Write a java swing program to display simple main menu. .
13. Write a Java program to create a icon-based JButton using java swing .
14. Write a JavaFX application program to Load and display an image using image view.
15. Write a program to create Menus using JavaFX.



**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title:** Core Practical : Operating Systems  
**Year :** II

**Subject Code:** 16PCA3CP3  
**Semester :** III

**4 Hours/Week**

**3 Credits**

1. Installation Requirements and procedure
2. Change the run level
3. Create and Change the Directories
4. Copy and rename Directories
5. Create File ,Edit and change name
6. Change the permission to the File and Directories using Numeric Method
7. Change the permission to the File and Directories using Symbolic Method
8. Create a file using Cat Command
9. Create a Soft link file and Hard link file
10. Create user, Set the password and change the permission to the user
11. Create Group and add the user under group and change the permission to the user
12. Create Shell Script to add user and set password
13. Create a Crontab
14. Create users using NEWUSER command

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title:** Core :Developing Web Applications  
**Year :** II

**Subject Code:** 17PCA4C04  
**Semester :** IV

**4 Hours/Week**

**4 Credits**

**Unit - I**

**HTML5:** Overview of HTML5 – HTML5 and its Essentials – Exploring New Features of HTML5 – Fundamentals of HTML (1-59) – Working with Text (77-94) – Organizing Text in HTML (113-117) – Working with Links and URLs (129-135) – Creating Tables (145-151) – Working with Forms (189-205) – Working with Multimedia (245-252).

**Unit - II**

**Bootstrap:** Introduction – Grid Basic – Typography – Tables – Images – Jumbotron – Alerts – Buttons – Glyphicons – Panels – Dropdowns – Navbar – Forms – Inputs – Input Sizing – Carousel  
**Material Design Lite:** Overview – Environment Setup – Layouts – Grids – Buttons – Progress Bars – Spinners – Menus – Sliders – Check Boxes – Radio Buttons – Icons – Switches – Data Tables – Text Fields

**Unit – III**

**Asp.Net 4.0 Essentials:** Overview of .NET Framework 4.0(1-15) - Exploring New Features of ASP.NET 4.0 (39 -42) - Developing a Web Application (57-76) - Application Structure and State (85-91)  
**Asp.Net 4.0 Controls:** Web Forms: Standard Controls (I)(109-117) - Web Forms: Standard Controls (II) (149- 166) - Navigation Controls: Tree View, Menu, and Sitemap Path (233-246) - Validation Controls (277 -282) -Introducing HTML Controls (357- 374 )

**Unit - IV**

Introducing PHP (1-18) – Using Variables and Operators (21-45) – Controlling program flow (49-82) – Working with cookies, sessions and headers (293 – 308) – Working with arrays (85-118).

**Unit - V**

Using functions and classes (121-148) – Date and Time Functions – String Functions – Math Functions – Working with files and directories (159-180) – Zip Functions – Mail Function – Working with databases and SQL (185-246)

**Text Book :**

1. Kogent Learning Solutions Inc “ASP.Net 4.5 Covers C# and VB Codes - Black Book”, Pubilshed by Wiley India.
2. Kogent Learning Solutions Inc., HTML5 Black Book Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP and JQuery, 2012

**References Book :**

1. Matthew Mac Donald “ The Complete Reference ASP.NET” Tata McGRAW HILL.
2. www.spoken-tutorial.org.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title:** Core :Internet of Things

**Subject Code:** 17PCA4C05

**Year :** II

**Semester :** IV

**4 Hours/Week**

**4 Credits**

**Unit – I**

**Introduction - Solution Patterns for the Internet of Things** - Design Patterns and the IoT - Smart, Connected Products - Smart, Connected Operations - New and Innovative Experiences - The Edge of the IoT - Living on the Edge - Edge Architecture Examples

**Unit – II**

**The Cloud** - Cloud-to-Device Connectivity - Device Ingress/Egress - Data Normalization and Protocol Translation - Infrastructure - APIs - The Topology of the Cloud.  
**IoT Applications:** The Semantic Model - Software UX Design Considerations - Machine Learning and Predictive Analytics - Rapid Application Development.

**Unit -III**

What is actually Arduino -Hardware and Software-Programming -

**Sensing Inputs**

Blinking LED-Alternately blinking LED-Fading LED -Light and sound-Push button and LED -RGB LED -Motion detector-Potentiometer-

**Outputs from sensing devices**

Temperature measurement -Measurement of distance -Usage of an infrared remote -Control a servo -LCD Display -Relay shield -Stepper-Moisture sensor-Drop sensor -RFID Kit.

**Unit -IV**

**The Arduino Board** - Get to know your tools - Spaceship interface - Love o Meter - Color Mixing lamp - Mood cup - Light Theremin - Keyboard instrument.

**Unit-V**

Digital hourglass-Motorized pinwheel - Zoetrope - Crystal ball - Knock Lock - Touchy feely lamp - Tweak the arduino logo - Hacking buttons.

**Text Books:**

1. J. Biron and J. Follett, "Foundational Elements of an IoT Solution", O'Reilly Media, 1st Edition, 2016. (Unit-I & II)
2. "Funduino Tutorials for Arduino", Funduino Service Team ,Edition 2016(Unit-III)
3. Scott Fitzgerald and Michael Shiloh,"The Arduino Projects Book",3rd Edition ,2015(Unit-IV and V)

**Reference Books:**

1. Keysight Technologies, "The Internet of Things: Enabling Technologies and Solutions for Design and Test", Application Note, 2016.
2. Charles Bell, "Beginning Sensor Networks with Arduino and Raspberry Pi", Apress, 2013.
3. D. Evans, "The Internet of Things: How the Next Evolution of the Internet Is Changing Everything", Cisco Internet Business Solutions Group, 2011
4. [www.spoken-tutorial.org](http://www.spoken-tutorial.org).

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course:** MCA  
**Year :** II

**Subject Code:** 16PCA4EL1  
**Semester :** IV

Credit: 3

**Elective: Open Source Application Development - Advanced Java -II**  
**Unit -I**

**Introduction: History** of web applications – Support for Servlets - The Power of Servlets.-Http Servlet Basics: HTTP Basic – The Servlet API – Page Generation – Web Applications – Moving On. - The Servlet Lifecycle: The Servlet Alternative – Servlet Reloading – Init and Destroy – Single-Thread Model – Background Processing – Load on Startup – Client side Caching – Server Side Caching **(Page Number 1-60)**

**Unit II**

**Retrieving Information:** The Servlet – The Server – The Client-.Sending HTML Information: The Structure of a Response – Sending a Normal Response – Using Persistent Connections – Response Buffering – Status Codes – HTTP Headers – When Things Go Wrong – Six Ways to Skin a Servlet Cat-Sending Multimedia Content: WAP and WML – Images – Compressed Content – Server Puch **(Page Number 72-196)**

**Unit III**

**Session Tracking:** User Authentication – Hidden Form Fields – URL Rewriting – Persistent Cookies – The Session Tracking API-Security: HTTP Authentication – Form Based Authentication - Custom Authentication - Digital Certificates – Secure Sockets Layer (SSL)-Database Connectivity: Relational Databases – The JDBC API – Reusing Database Objects – **(Page Number 200-280)**

**Unit IV**

**Element of JSP:- Components of a jsp page – A complete Example –Expressions, script lets and Declarations –Request Dispatching JSP Tag Extensions :- Introduction to custom Tags –Handlers works –Tag Libraries –Tag handlers API -Chapter 2,3 &4 Page Number (61- 156)**

**Unit V**

**JSP in Action:-** HTML Forms-The FORM Element-Form Input Elements-Form Validation-The Server Side of Forms Handling- Overview of JDBC –JDBC Drivers – Connecting to a Database with Driver management**(Page Number 261-289, 297-318,401-417)**

**Text Book:**

1. Jason Hunter with William Crawford “Java Servlet Programming “ 2<sup>nd</sup> Edition , Robert Eckstein and Paula Ferguson, (Unit I ,II,and III)
2. Hanna “ The Complete Reference jsp2.0 “5<sup>th</sup> Edition , TATAMcGraw Hill (Unit IV and V)

**References Book :**

1. Herbert Schildt “ The Complete Reference -java 2”,5<sup>th</sup> Edition, TATAMcGraw Hill,2002.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course : MCA**

**Course Title:** Core Practical : Developing Web Applications

**Subject Code:** 17PCA4CP5

**Year : II**

**Semester : IV**

**4 Hours/Week**

**3 Credits**

1. Write Html5 program and create Student Profile with the following information  
A) Reg No,B) Student Name,C) DOB,D) Course Name,E) Address line 1,F) District  
G) Pincode,H) Mobile Number,I) and E-Mail ID
2. Write a program in Bootstrap responsive form design and create student profile with the following information.  
A) Reg No,B) Student Name,C) DOB,D) Course Name,E) Address line 1,F) District  
G) Pincode,H) Mobile Number, and I) E-Mail ID
3. Write a program in Material Design Lite form design and create employee details with the following information.  
A) Emp No,B) Emp Name,C) Designation,D) Qualification,E) Address line 1,F) District  
G) Pincode, and H) Mobile Number
4. Write a program in HTML5 and create a home page for your college.
5. Write a program in Bootstrap responsive home page for your college.
6. Write the ASP.Net Program and create the Education Details using HTML Controls.
7. Write the ASP.Net Program and create the HTML Table using HTML Checkbox.
8. Write the ASP.Net Program and count the characters, words and lines using HTML textarea.
9. Write the ASP.Net Program and show the multi validation form using ASP control.
10. Write the ASP.Net Program and change the image using HTML controls.
11. Write the ASP.Net Program and create the windows calculator.
12. Write the ASP.Net Program and create the Data Binding to an Arraylist.
13. Write the ASP.Net Program and display the employee details using xml binding.
14. Write a PHP program and find the factorial of n numbers?
15. Write a PHP program and sort the given array values?
16. Write a PHP program and create a simple calculator using class and objects?
17. Write a PHP program create, read and display the file using file directory functions?
18. Write a PHP program, post and display the data in same file using query string variable from the form design?
19. Write a PHP program to create and store the student information without using querystring variable?
20. Write a PHP program and view the student information records?
21. Write a PHP program and perform login and logout concept using MySql Database?

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course : MCA**

**Course Title:** Core Practical - Internet of Things  
**Year : II**

**Subject Code:** 17PCA4CP6  
**Semester : IV**

**4 Hours/Week**

**3 Credits**

1. Design a Spaceship interface
2. Design a Love o Meter
3. Design a Color Mixing lamp
4. Design a Mood cup
5. Design a Light Theremin
6. Design a Keyboard instrument
7. Design a Digital hourglass
8. Design a Motorized pinwheel
9. Design a Zoetrope
10. Design a Crystal ball
11. Design a Knock Lock
12. Design a Touchy feely lamp
13. Design a Tweak the arduino logo
14. Design a Hacking buttons.



**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course : MCA**  
**Year : II**

**Subject Code : 16PCA4EP1**  
**Semester : IV**

Credit: 3

**Elective Practical: Open Source Application Development - Advanced Java -II**

1. Write a java program for getting the server details by the servlet class.
2. To write a java program for ho the server implement HttpSession object
3. To implement cookies in your servlet application.
4. To create the JSP application with the listeners
5. To implement servlet Thread model with suitable application
6. To implement the JSP application with the Filters.
7. To implement JSP application to the JDBC database for suitable application
8. To create session bean object in your Enterprise bean application
9. Write a java program, to access remote object in the Enterprise bean application
10. Write a java program to get JNDI context using the Naming service in Enterprise JavaBeans application.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course :** MCA

**Course Title:** Core :Enterprise Web Applications Development **Subject Code:** 17PCA5C06

**Year :** III

**Semester:** V

**4 Hours/Week**

**4 Credits**

### **Unit I**

**JQuery:** Introduction to JQuery (1-8) – Element getters and setters (13-21) – Altering document structure (25-29) – Events and Animated Effects (31-58) – Ajax and Utility functions (63-88) – JQuery with plugins (103-108).

**AngularJS:** Introduction – Angular Expressions – Angular Modules – Angular Directives – Angular Model – Angular Data Binding – Angular Controllers – Angular Filters – Angular SQL – Case Studies.

### **Unit II**

Getting started with Ajax (433-435) – Writing Ajax (435) – Creating and Opening XMLHttpRequest object (436-440) – Handling & Starting the Downloaded data (441-447) – Ajax with Some PHP (448) – Passing Data to the Server with GET & POST (449-455).

### **Unit III**

**Accessing Data in Asp.net 4.0:Working** with Database Controls (403- 426) - LINQ Queries (513 -529) -ADO.NET Entity Framework (591- 614)

**Building Asp.net 4.0 Enterprise Applications: ASP.NET AJAX Control Toolkit (763- 792) - ASP.NET Web Services (1171 -1187) -WCF Services -ASP.NET MVC Framework (1231- 1261)**

### **Unit IV**

**Administering Asp.net 4.0**Developing Websites Compliant with Web Standards (1307 - 1310) - Application Tracking (1329- 1326) – Security and Cryptography in ASP.NET (1453 -1500) - Implementing Crystal Reports in ASP.NET 4.0 (1553- 1568) - Deploying Web applications (1605 – 1617)

### **Unit V**

**Laravel: Installation** and Composer - Basic Routing and Views - Laravel Valet is Your Best Friend - Database Setup and Sequel Pro - Pass Data to Your Views - Working With the Query Builder- Eloquent 101 - Controllers - Route Model Binding - Layouts and Structure – Case Studies.

### **TEXT BOOKS:**

1. Kogent Learning Solutions Inc “ASP.Net 4.5 Covers C# and VB Codes - Black Book”, Pubilshed by Wiley india.
2. Vikram Vaswani, A Beginner’s Guide PHP, 1<sup>st</sup> Edition, Tata McGraw Hill, 2008.
3. David Flanagan and O’Reilly, JQuery Pocket Reference, 1<sup>st</sup> Edition, 2011.

### **REFERENCE BOOKS:**

1. Kogent Learning Solutions Inc., HTML5 Black Book Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP and JQuery, 2012
2. <http://www.w3schools.com>
3. <https://laracasts.com/series/laravel-from-scratch>

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

Course : MCA  
Year : III

Subject Code: 17PCA5C07  
Semester : V

Credit: 4

**Core : Open Source Application Development with Android and Content Management**

UNIT -I

**The History of the Android OS-Configuring Your Android App Development System-Updating Eclipse ADT-Configuring EclipseAndroid SDK Manager Repository-Android Virtual Devices- Creating the AVD- Android Application Development Platform: How the Android Platform is Structured–Android Runtimes-Creating Your First Android Application- Android Resources- Asset Project Folders(Page No : 1-84)**

UNIT –II

**Introduction to XML:**Defining an Android App, Its Design, and Constants-Android Screen Design: Writing to the Display Using Activity and View- Making Apps Interactive: Intents, Event Handling, and Menus.(Page No:101-130,167-172,213-256)

UNIT- III

**Android Animation:** Making Your UI Designs Move-Frame Animation Concepts and Techniques-Creating Frame Animation Using XML Markup-Creating Frame Animation in MainActivity-Creating Tween Animation Using XML- MarkupHybrid -Animation Using Frames with Tween- Streaming Video, MediaPlayer, and MediaController classes- (Page No: 353-396,399-439)

UNIT –IV

**Telephony:** Exploring telephony background and terms – accessing telephony information – interacting with the phone – working with the messaging: SMS-**Notifications and alarms:** Introducing Toast – introducing notifications – introducing alarms-**Graphics:** Drawing graphics in android – Creating animations with android’s graphics API – introducing OpenGL for embedded system(Page No: 187-233)

UNIT -V

**Location, location, location:** Simulating your location within the emulator – Using **LocationManager** and **LocationProvider** – Working maps – Converting places and address with Geocoder - **Bluetooth and sensors:** Capabilities- Sensor Manager (**Page no: 267 – 288 ,361-381** )

**Text Book :**

1. Wallace Jackson, Android Applications for Absolute Beginners, Publisher Apress, Edition Third, Year 2014 (Unit – I, II and III)
2. W. Frank Ableson Robi Sen Chris King “Android in Action” .2nd Edition , Manning Publications, 2011. (Unit – IV and V)

**References Book :**

1. Shawn Van Every “Pro Android Media: Developing Graphics, Music, Video, and Rich Media Apps for Smartphones and Tablets “.
2. W. Frank Ableson Robi Sen Chris King “Android in Action” .2nd Edition , Manning Publications, 2011.



**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS  
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**Course :** MCA

**Course Title:** Core Practical - Enterprise Web Applications Development

**Subject Code:** 17PCA5CP8

**Year :** III

**Semester :** V

**4 Hours/Week**

**3 Credits**

1. Write a JQuery program and create the fadein and fadeout effect using div id key?
2. Write an AngularJS program and display the content using model?
3. Write an AngularJS program and display the table with filter concept?
4. Write an Ajax program and display the student details with filter option based on regno using PHP?
5. Write an Ajax program and display the student details with filter option based on regno using ASP.Net?
6. Write the ASP.Net Program and view student details in grid view using LINQ Query.
7. Write the ASP.Net Program and view student database in grid view using access datasource.
8. Write the ASP.Net Program and add the two number using ajax extensions update pane.
9. Write the ASP.Net Program and display the product details in gridview without using sql server sqldatasource control.
10. Write the ASP.Net Program and display the student details in gridview without accessdatasource control using ms-access.
11. Write the ASP.Net Program to create student details using entity framework database first approach.
12. Write the ASP.Net program to create a simple database connection with save and view student details.
13. Write the ASP.Net MVC Program to create and display the student information.
14. Write a PHP program and perform MVC Concept using Laravel and display the student information without using database.
15. Write a PHP program and perform MVC Concept using Laravel and display the student information with database eloquent.

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**Course : MCA**  
**Year : III**

**Subject Code : 17PCA5CP9**  
**Semester : V**

Credit: 3

**Core Practical : Open Source Application Development with Android and Content Management**

1. Write a android program to display the date and time picker
2. Write a program to demonstrate usage of two textbox(EditText), Label(Textview) and Button widgets in android and perform addition of two numbers.
3. Write a android program to display the mobile IMEI Number
4. Write a android program to display the option menu
5. Write a android program to display the List View
6. Write a android program to create user dial call
7. Write a android program to Web view Using Load URI
8. Write a android program to passing values one form to another form
9. Write a android program for include multiple layouts
10. Write a android program display the Custom Font
11. Write a android program display the notification
12. Write a android program display the splash screen
13. Write a android program to create user Send to Sms
14. Write a simple program to demonstrate the contact manager using ContactsContract API (Insert, Delete, Edit, View).
15. Write a simple program to demonstrate working with SQLite Database.

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**Course:** MCA

**Course Title:** Elective Practical: Data warehousing and Mining algorithm

**Subject Code:** 16PCA5EP2

**Year :** III

**Semester :** V

**4 Hours/Week**

**3 Credits**

1. Write a program to perform association task using apriori algorithm
2. Write a program to perform classification using binary logistic regression algorithm
3. Write a program to perform regression using multi variate linear regression algorithm
4. Write a program to perform clustering using k-means algorithm
5. Write a program to perform clustering using C-cluster algorithm
6. Write a program to perform optimization using genetic algorithm
7. Write a program to calculate similarity measures of documents: a) Dice b) Jaccard  
c) Cosine d) overlap e) Euclidean f) Manhattan
8. Write a program to calculate similarity measures of documents: Write a program to  
find splitivity attribute using ID3 algorithm, CART algorithm, C4.5, SPRINT.
9. Write a program for set of data using NN algorithm  
  
Write a program divisive clustering algorithm, Hierarchical algorithm, Agglomerative  
algorithm, squared error clustering algorithm for any set of data



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Course: MCA

Subject Code: 16PCA4EL1

Year : II

Semester : IV

Credit: 3

**Elective : Dreamweaver, Wordpress And Joomla**

**Unit I**

**Introducing Dreamweaver** 8 (11 – 40) - Accessing the Code Directly (155 – 200) - Building Style Sheet Web Pages (209 – 248) - Working with Text (249 – 300) - Inserting Images (301 – 338) - Establishing Web Links ( 339 – 345)

**Unit II**

Working with Divs and Layers, Using behaviors (359 – 390) - Setting Up Tables, Interactive Forms (435 – 500), Creating lists, Using Frames and Framesets (513 – 568) - Working with Timelines (569 – 586).

**Unit III**

**Introduction to Wordpress, Installing** (1 – 32) – **Dashboard and Settings** ( 41 – 58) – **Working with content** (61 – 101) – **Importing Content** (105 – 122).

**Unit IV**

**Creating Themes** (125 – 171) – **Creating Widgets** (205 – 223) – **Creating Plugins** (225 – 268) – **Users and Roles** (271 – 288) – **Performance and Security** (289 – 305)

**Unit V**

**Introducing Joomla**, Installation and Configuration (1 – 42) – **Developing Templates** ( 45 – 79) – **Adding and Modifying Available Extensions** (81 – 116) – **Design Patterns and Joomla** (179 – 192).

**TEXT BOOKS:**

1. Joseph W.Lowery ,“Dreamweaver 8 Bible” Wiley Publishing, Inc. (Unit –I & II)
2. Stephanie Leary “Beginning WordPress 3 “ A press. (Unit III & IV)
3. Dan Rahmel “Professional Joomla!”, Wiley Publishing, Inc. (Unit – V)

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AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.**

**Course:** MCA

**Course Title:** Elective Practical: Dreamweaver, Wordpress And Joomla

**Subject Code:** 16PCA4EP1

**Year :** II

**Semester :** IV

**Credit:** 3

1. Joomla 1.5 or Joomla 1.6 Installation Process.
2. Joomla Default Template Editing and Uploading.
3. Joomla Control Panel and Joomla Website understanding.
4. Joomla Template implementation in Joomla 1.6 using Extension Manager.
5. Web site Menu development using Menu manager in Joomla.
6. Website Article Development using Joomla Article Manager and Design.
7. Wordpress Installation Process.
8. Wordpress Content management Article Development.
9. Wordpress Menu management using Menu manager.
10. Wordpress website implementation and control panel.

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Course : MCA

Subject Code: 16PCA4EL1

Year : III

Semester : V

Credit: 3

**Elective : Software Development Lifecycle Management**

**UNIT – I**

**Introduction** – What is a Project – Software Project versus Other Types of Project – Activities Covered by Software Project Management – Some Ways Of Categorizing Software Projects – The Project as a System – What is Management – Problem with Software Projects – Management Control – Stakeholders – Requirement Specification – Information Specification – Information and Control in Organizations. **[P.NO: 1-18]**- Identify Project Scope and Objectives Identify Project Scope and Objectives Identify Project Infrastructure - Analyze Project Characteristics - Identify Project Products and Activities **[P.NO:19-36]**

**UNIT –II**

**Introduction – Strategic Assessment – Technical Assessment – Cost Benefit Analysis** – Cash Flow Forecasting – Cost-benefit Evaluation Techniques – Risk Evaluation. **[P.NO:37-55]**

Selection of Appropriate Project Approach: Introduction – Choosing Technologies - Technical Plan Contents list – Choice of Process Models – Structured Methods – Rapid Application Development – The Waterfall Model – The V Process Model – The Spiral Model – Software Prototyping – Other Ways of categorizing Prototypes – Tools **[P.NO:57-77]**

**UNIT- III**

**Risk Management:** Introduction – The Nature of risk – Managing Risk – Risk Identification – Risk Analysis – Reducing the risk – Evaluating risks to the Schedule – Calculating the Z Values. **[P.NO:133-150]**- Resource Allocation : Introduction – The Nature of Resources – Identifying Resource Requirements – Scheduling Resources – Creating Critical Paths – Counting the Cost – Being Specific – Publishing the Resource Schedule – Cost Schedules – The Scheduling Sequence. **[P.NO:151-167]**

**UNIT – IV**

**Monitoring and Control : Introduction – Creating the Framework – Collecting the Data – Visualizing Progress – Cost** Monitoring – Earned Value – Prioritizing Monitoring – Getting the Project back to Target – Change Control. **[P.NO:169-190]**- Managing Contracts : Introduction – Types of Contract – Stages in Contract Placement – Typical Terms of a Contract – Contract Management – Acceptance. **[P.NO:191-208]**

**UNIT – V**

Managing People and Organizing Teams : Introduction – Understanding Behaviors – Organizational Behaviors: a background – Selecting the right Person for the job – Instruction in the best methods – Motivation – working in Groups – Becoming in Groups – Becoming a Team – Decision Making – Leadership –Organizational Structures. [P.NO:211-232]-Small Project: Introduction – Some Problems with Student Projects – Content of a Project Plan [P.NO:261-273]

**Text Book :**

1. Bob Hughes and Mike Cotterell “Software Project Management ”. 2<sup>nd</sup> Edition,TataMcGra-Hill Edition 2001.

**References Book :**

1. Mickey Gousset, Brian Keller, Ajoy Krishnamoorthy and Martin Woodward “Professional Application Lifecycle Management”.

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Course : MCA

Subject Code: 16PCA4EP1

Year : II

Semester : IV

Credit: 3

**Elective Practical: Software Development Lifecycle Management**

**1 . Concept of Software Development and its Life Cycle**

Study the Create a Story on the Requirement for Student Progress Card Management in your college

Create a functional work flow chart for the requirement collected on Student Progress Card Management in your college

**2 . Understanding Project Scheduling and Documentation for Development Specification**

Create a Functional document specifying the complete requirements of the Student Progress Management

Create a Project Plan using MS Project on the Student Progress Management Project

**3. Using and Working With Microsoft Viso for Project Documentation**

Create a ERD and Physical Data Model for Student Progress Management Database

Create the detailed Workflow for the activities and process done in Student Progress Management

**4 . Understanding the Requirements / Workflow / Creating Use Cases and UI Prototypes**

Create the UI Prototype for the Student Progress Management

Create the Use Case and Class diagrams for Student Progress Management

**5. Creating Documents for Program Modules / Classes / Sequence / Activity Diagram**

Create a detailed activity diagram for the Student Progress Management Methods in the Class

Create a Sequence Diagram for the interaction of the Methods in the Student Progress Management Classes

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Course : MCA

Subject Code: 16PCA5EL2

Year : III

**Semester** : V

Credit: 3

Elective : **Software Building / Release and Testing Management**

**Unit –I**

Software quality assurance : Overview – The software Crisis – The birth of software Engineering- The software Chaos – Criteria for the success of a software project – Process oriented software development –Phases in software development life cycle and models – software testing tools- The management process –software quality assurance – quality management system – process change management **(PG.NO: 13 – 66)**

**Unit –II**

**Software testing process–Psychology of testing – verification and validation – testing team and development team – cost of** quality – characteristics of test engineers-level of testing –testing approaches – types of testing –test plan – criteria for completion of testing – software reliability – manual testing and its limitation/drawbacks **(PG.NO: 69 – 95)**

**Unit –III**

**Software testing tools:** Overview –Need for Automated testing tools- Taxonomy of testing tools– Functional/Regression testing tools- Performance testing tools – Testing management tools- Source code testing tool – select a testing tool –Win runner :Overview –Testing application using Win Runner – Test Script Language (TSL) – GUI Map File – Synchronization of test cases – Data-Driven testing – Rapid test script wizard – Mapping custom object to a standard class – checking GUI objects **(PG.NO: 97 – 163)**

**Unit –IV**

**Skill Test : Overview** –Architecture –Testing an application using skill test- The 4test Scripting language –checkpoint –Data-Driven Test cases –SQA Robot: Overview – Testing an application using SQA Robot –Synchronization of test procedures- Creating Checkpoints- Load Runner : Overview – creating V user script using Virtual User Generator – Creating Virtual Users using Load runner Controller **(PG.NO: 167 – 235)**

## Unit –V

JMeter : Overview- JDBC Test – HTTP test – Test Director :Overview – Testing Management process – Managing the testing process using Test Director (PG.NO: 243 – 295)

### **Text Book :**

1.Dr. K.V.K.K Prasad “Software Testing Tools” 5<sup>th</sup> Edition 2004

### **References Book :**

1. Srinivasan Desikan ,Gopaldaswamy Ramesh “ Software Testing principles and practices “ 6th Edition , 2008,
2. William E.Perry “ Effective Methods for Software Testing “, 3<sup>rd</sup> Edition , Willey India Edition .

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**Course: MCA**

**Course Title: Elective Practical: Software Building / Release and Testing Management**

**Subject Code: 16PCA5EP2**

**Year : II**

**Semester : IV**

**Credit: 3**

1. Software quality assurance.
2. Software testing process
3. Select a testing tool
4. Functional/Regression testing tools
5. Test Script Language.
6. Mapping custom object to a standard class.
7. The 4test Scripting language
8. Creating V user script using Virtual User Generator.
9. Creating Virtual Users using Load runner Controller.
10. Testing Management process



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Course : MCA

Subject Code: 16PCA5EL2

Year : III

Semester : V

Credit: 3

**Elective: Advanced File system Management and User Administration**

**UNIT - I**

**Boot sequence overview-Boot loader** components-GRUB- Kernel Initialization- init initialization - Run levels- Controlling Services (page no 3-14)- RMP Package Manager- Installing and Removing software-Updating a Kernel RMP (page no 21-23)-About and using yum- Searching packages and Files-Configuring additional repository-red hat network and server- entitlements- Red hat network client(page no 26-34)

**UNIT – II**

**SSH: Secure** Shell-VNC:Virtual Network Computing – System crontab files (page no 83-86)Adding a new user account – User private Groups- Modifying and deleting user accounts-Group Administration- password Aging polices- switching accounts- sudo(page no 100-106)- Default permissions-Access Control Lists- SELinux- SELinux, Continued, Targeted,policy, Management(page no 114-121)-

**UNIT – III**

**Device Recognition- Disk** partitioning- managing partitions-Making Filesystems(page no 143-146)- Mount points- mounting file system with mount-Unmounting file systems(page no 149-152)- Network interfaces- Driver selection- speed and duplex settings-IPv4 address- Dynamic and static IPv4 configurations-Device Aliases- Routing table-Default gateway-Configuring Routes- Verify IP connectivity- Define the local host name-Local and remote Resolvers – verify DNS Connectivity(page 209-226)

**UNIT - IV**

**INSTALLATION: Anaconda, RHEL installer- starting installation – Boot media- accessing the installer – installation method- Network installation server-installation overview-configuring file system-advance partitioning(page no 246-255)**

**Troubleshooting :Networking - boot process – file system corruption and recovery-recovery run level(page no 300-305)**

**UNIT – V**

**Server Configuration: FTP Server – DHCP Server – DNS Server –Mail Server – Web Server – Samba Server –Proxy Server (Squid)**

**Textbooks:**

1. RedHat Enterprise Linux Essentials (RH133) (**Unit I,II,III,IV ,V**)
2. RedHat Enterprise Linux Essentials (RH253) (**Unit V**)

**Reference Books:**

1. EVI Nemeth ,“Linux Administration hand “ , Pearson Education ,2003.
2. Neil Matthew, “Professional Linux Programming”, A Press L.P ,2004.
3. Richard L.Petersen “Linux Complete Reference “5th Edition, TATA McGraw-Hill Edition ,2003.

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**Course : MCA**

**Subject Code: 16PCA5EP2**

**Year : III**

**Semester : V**

**Credit: 3**

**Elective Practical: Advanced File system Management and User Administration**

1. Create and Manage Disk partition
2. Manage and Change File System
3. Create and Configure Sub Interface
4. Install and Remove Software
5. Use Kickstart to Automate Installation
6. Group Administration and Modifying/Deleting Accounts
7. Configure NIS Client
8. Configure ACL
9. Configure New Printer
10. Configure RAID