

**SRI RAMAKRISHNA MISSION VIDYALAYA
COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS), COIMBATORE – 641 020.
M.C.A under Choice Based Credit System (CBCS) 2019-2020 Onwards
SYLLABUS**

SEMESTER – I

S.No	COURSE CODE	COURSE TITLE	HRS/WK	CREDITS	MAX MARKS		
					INT	EXT	TOT
01	16PCA1C01	Core: Object Oriented Programming with C++	5	4	25	75	100
02	16PCA1C02	Core :Data structure using C++	5	4	25	75	100
03	16PCA1C03	Core :Relational Database Management System	4	4	25	75	100
04	16PCA1C04	Core :Fundamentals of Accounting	4	4	25	75	100
05	16PCA1CP1	Core Practical- C++ Programming	4	3	40	60	100
06	16PCA1CP2	Core Practical- Data Structures using C++	4	3	40	60	100
07	16PCA1CP3	Core Practical- Relational Database Management System	4	3	40	60	100
TOTAL			30	25			700

SEMESTER – II

S.No	COURSE CODE	COURSE TITLE	HRS/WK	CREDITS	MAX MARKS		
					INT	EXT	TOT
01	16PCA2C05	Core :Visual Programming (. Net)	5	4	25	75	100
02	16PCA2C06	Core :Computer Networks	5	4	25	75	100
03	16PCA2C07	Core :Software Engineering	4	4	25	75	100
04	16PCA2C08	Core: Multimedia -I (Photoshop and Illustrator)	4	4	25	75	100
05	16PCA2CP4	Core Practical :Visual Programming (.Net)	4	3	40	60	100
06	16PCA2CP5	Core Practical :Multimedia (Photoshop and Illustrator	4	3	40	60	100
07	16PCA2CP6	Core :Mini-project	4	3	25	75	100
TOTAL			30	25			700

SEMESTER – III

S.No	COURSE CODE	COURSE TITLE	HRS/WK	CREDITS	MAX MARKS		
					INT	EXT	TOT
01	19PCA3C01	Core :Developing Web Applications	5	4	25	75	100
02	19PCA3C02	Core :Open Source Application Development - Advanced Java-I	5	4	25	75	100
03	19PCA3C03	Core : Networking programming using python	4	4	25	75	100
04	19PCA3CP1	Core Practical :Developing Web Applications	4	3	40	60	100
05	19PCA3CP2	Core Practical :Open Source Application Development with Advanced Java-I	4	3	40	60	100
06	19PCA3CP3	Core Practical :Networking programming using python	4	3	40	60	100
07	19PCA3CP4	Core:Mini Project	4	3	25	75	100
TOTAL			30	24			700

SEMESTER – IV

S.No	COURSE CODE	COURSE TITLE	HRS/WK	CREDITS	MAX MARKS		
					INT	EXT	TOT
01	17PCA4C04	Core: Enterprise Web Applications Development	5	4	25	75	100
02	17PCA4C05	Core: Internet of Things	5	4	25	75	100
03	16PCA4EL1	**Elective	4	3	25	75	100
04	17PCA4CP5	Core Practical : Enterprise Web Applications Development	4	3	40	60	100
05	17PCA4CP6	Core Practical - Internet of Things	4	3	40	60	100
06	16PCA4EP1	**Elective Practical	4	3	40	60	100
07	16PCA4CP7	Core :Mini- Project	4	3	25	75	100
TOTAL			30	23			700

SEMESTER – V

S.No	COURSE CODE	COURSE TITLE	HRS/WK	CREDITS	MAX MARKS		
					INT	EXT	TOT
01	19PCA5C06	Core :Data Science Using R	5	4	25	75	100
02	19PCA5C07	Core :Open Source Application Development with Android and Content Management	5	4	25	75	100
03	19PCA5EL2	##Elective	4	3	25	75	100
04	19PCA5CP8	Core Practical : Data Science Using R	4	3	40	60	100
05	19PCA5CP9	Core Practical : Open Source Application Development with Android and Content Management	4	3	40	60	100
06	19PCA5EP2	##Practical Elective	4	3	40	60	100
07	19PCA5P10	Core :Mini -Project	4	3	25	75	100
TOTAL			30	23			700

SEMESTER – VI

S.No	COURSE CODE	COURSE TITLE	HRS/WK	CREDITS	MAX MARKS		
					INT	EXT	TOT
01	19PCA6CPR	Project Work and Viva-Voce	20	20	160	240	400
TOTAL			20	20	160	240	400

****LIST OF ELECTIVES – (FOR SEMESTER – IV)**

S.No	COURSE CODE	COURSE TITLE	HRS/WK	CREDITS	MAX MARKS		
					INT	EXT	TOT
01	16PCA4EL1	Elective : Dreamweaver, Wordpress And Joomla	4	3	25	75	100
02	16PCA4EL1	Elective : Open Source Application Development - Advanced Java -II	4	3	25	75	100
03	16PCA4EL1	Elective : Software Development Lifecycle Management	4	3	25	75	100
04	16PCA4EP1	Elective Practical: Dreamweaver, Wordpress And Joomla	4	3	25	75	100
05	16PCA4EP1	Elective Practical: Open Source Application Development - Advanced Java -II	4	3	40	60	100
06	16PCA4EP1	Elective Practical: Software Development Lifecycle Management	4	3	40	60	100

##LIST OF ELECTIVES – (FOR SEMESTER – V)

S.No	COURSE CODE	COURSE TITLE	HRS/WK	CREDITS	MAX MARKS		
					INT	EXT	TOT
01	19PCA5EL2	Elective : Software Building / Release and Testing Management	4	3	25	75	100
02	19PCA5EL2	Elective : Advanced File system Management and User Administration	4	3	25	75	100
03	19PCA5EL2	Elective :AngularJS and DevOps	4	3	25	75	100
04	19PCA5EP2	Elective Practical: Software Building / Release and Testing Management	4	3	25	75	100
05	19PCA5EP2	Elective Practical: Advanced File system Management and User Administration	4	3	40	60	100
06	19PCA5EP2	Practical Elective :AngularJS and DevOps	4	3	40	60	100

Total Marks : 3900

Total Credits : 140

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE
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Program	: MCA		
Course Title	: Core :Object Oriented Programming with C++		
Course Code	: 16PCA1C01		
Year	: I	Semester	: I
Hours/Week	: 5	Credits	: 4

COURSE OBJECTIVES:

- To make the students to be aware of the basic concepts of OOPS.
- To make them to understand the benefits and applications of OOPS.
- Developing the programs by making use of the concepts of OOPS.

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Ability to understand the data types and control structures.
CO2	Ability to demonstrate the use of overloading and inheritance
CO3	Ability to demonstrate the use of pointers in virtual functions to implement polymorphism.
CO4	Ability to understand and implement the features of C++ including file handling and exception handling.

Unit - I

Principles of Object Oriented Programming – Software Evaluation – OOP Paradigm – Basic concepts of OOP – Benefits of OOP – Object Oriented languages – Applications of OOP.

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.

Unit - III

Classes and Objects: Constructors and Destructors and Operator Overloading and type conversions.

Unit - IV

Inheritance: Single Inheritance-Multilevel Inheritance –Multiple Inheritance – Hierarchical Inheritance – Hybrid Inheritance. Pointer – Virtual functions and Polymorphism – Managing console I/O operations.

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.Templates and Exception Handling: Class Templates-Function Templates – Member Function Templates- Type Template Arguments – Non Type Template type arguments – Exception Handling.

TEXT BOOK:

1. E.Balagurusamy, "Object Oriented Programming with C++", 4th Edition, Tata McGraw Hill Publication , 2002.

REFERENCE BOOK:

1. Herbert Schildt," C++ FROM THE GROUND UP " Osborne MGH , 2002.
2. Yashant Kanetkar , "C++" ,2002.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE
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Program	: MCA	Course Code	: 16PCA1C02
Course Title	: Core :Data structure using C++	Semester	: I
Year	: I	Credits	: 4
Hours/Week	: 5		

COURSE OBJECTIVES:

- To understand the linear and non-linear data structures available in solving problems
- To get a clear idea about the various algorithm design techniques
- Using the data structures and algorithms in real time applications

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Ability to analyze algorithms and algorithm correctness
CO2	Ability to apply in stack, queue and linked list in data structure
CO3	Ability to have knowledge of tree and graphs concepts
CO4	Ability to work with various searching and sorting techniques

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.

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.

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.

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

Unit - IV

Internal sorting: Insertion Sort – Quick sort – Merge Sort - Heaps sort] External Sorting: Storage Devices - Sorting with Disks – Sorting with Tapes

Symbol tables: Static Tree tables – Dynamic Tree Tables – Hash Tables.

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.

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
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Program : MCA
Course Title : Core :Relational Database Management System
Course Code : 16PCA1C03
Year : I **Semester** : I
Hours/Week : 4 **Credits** : 4

COURSE OBJECTIVE

- Learn and practice data modelling using the entity relationship and modelling database designs
- Understand the use of structured query language and learn SQL syntax
- Apply normalization techniques to normalize the database.

COURSE OUTCOME

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Ability to describe data models and schemas in DBMS
CO2	Understanding the Features of database management systems and Relational database
CO3	Ability to use SQL-Standard Query Language for Relational databases
CO4	Ability to understand the functional dependencies and design of the database

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.

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.

Unit - II

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

Relational Database Design - Pitfalls in Relational Database Design- Decomposition - Normalization Using Functional Dependencies - Normalization Using Multi valued Dependencies - Normalization Using Join Dependencies.

Unit - III

Distributed Database Systems: Introduction – Distributed DBMS Architecture: DBMS standardization – Achitectural Models fro Distributed DBMS’s – Distributed DBMS Architecture - Distributed Database Design: Distribution Design Issues– Query Decomposition and Data Localization– Introduction to Transaction Management

Unit - IV

Object-Oriented Databases - The Object-Oriented Data Model - Object-Oriented Languages - Persistent Programming Languages - Persistent C++ Systems

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

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- Oracle Functions: Aggregate functions (Group)- Single Row functions (Scalar): String , Numeric , Conversion, Date Functions– sub queries (– indexes – views - clusters– sequences

Introduction to PL/SQL – PL/SQL Block – Control structures-Cursors – Exception handling- Procedures, Functions, Database Triggers, Types of Triggers

TEXT BOOKS:

1. A.Silberschatz, H.Korth and S.Sudarsan,” Database System Concepts”,4thEdition,TATA McGraw Hill Inc., 2002
2. M.Tamer Ozsu Patrick Valduriez, “Distributed database Systems”,2nd Edition , Pearl Education, 1999.
3. Ivan Bayross,”SQL,PL/SQL The Programming Language of Oracle”3rd EditionBPB Publications, 2007.

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.

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Program : MCA
Course Title : Core Practical: C++ Programming
Course Code : 16PCA1CP1
Year : I **Semester** : I
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To develop simple programs using class.
- To develop simple C++ programs for solving mathematical problems.
- To develop C++ programs by incorporating OOPS concepts.

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Ability to write a simple program using class.
CO2	Ability to develop programs to solve mathematical problems
CO3	Capability of developing programs using OOP concepts.
CO4	Capable of developing programs using pointers using virtual functions.

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.

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Program : MCA
Course Title : Core Practical: Data Structures using C++ **Course Code** : 16PCA1CP2
Year : I **Semester** : I
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To impart the concept of linear data structure(Array, Stack and Queue)
- To understand the concept of pointers for writing singly linked list and doubly linked list programs
- To understand basics of searching and sorting techniques

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Ability to analyze algorithms and algorithm correctness.
CO2	Ability to perform searching and sorting techniques.
CO3	Ability to accomplish stack, queue and linked list operation.
CO4	Ability to have knowledge about file concepts.

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)

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Program : MCA
Course Title : Core Practical: Relational Database Management System
Course Code : 16PCA1CP3
Year : I **Semester** : I
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To impart the basic concepts of DDL, DML commands
- To understand concepts of set operations, relational and logical operations
- To understand the inbuilt functions & PL/SQL structure and operations

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Ability to perform DDL, DML commands in a database
CO2	Ability to have knowledge about various operations like set operations, relational and logical operations
CO3	Ability to understand the PL/SQL structure and operations
CO4	Ability to apply PL/SQL concepts to solve real time problems.

1. Exploring the Simple queries with DDL Commands using SQL.
2. Exploring the Simple queries with DML Commands using SQL.
3. Exploring the Comparison (relational) operator and Logical operator using SQL.
4. Exploring the Set operations and sorting and grouping operator using SQL.
5. Exploring the built-in functions i) Count Function ii) Character Function using SQL.
6. Exploring the built-in functions i) Number Function ii) Date function using SQL.
7. Create a student table contains reg-no, stud-name, class, subjects to perform an Aggregate operations using SQL.
8. Create a table PASSENGER with the fields Ticket no (Primary Key), name, age, gender and fare. Write a PL/SQL procedure to print the details of all the passenger, name, age, gender and fare.
9. Write a PL/SQL recursive functions for finding Factorial Series for the given no of terms.
10. Write a PL/SQL recursive functions for Generating Fibonacci Series for the given no.
11. Write PL/SQL statements to perform arithmetic operations.
12. Write a PL/SQL statements to print “n” numbers using while loop / For loop.
13. Write a PL/SQL code to calculate the area of a circle.
14. Create a function to return a fare from tickets booking table which contains bus_code, origin, fare, destinations, time of departure, data of travelling.
15. Create a function to return a current stock value for a given product.

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Program : MCA	
Course Title : Core :Visual Programming (. Net)	Course Code : 16PCA2C05
Year : I	Semester :II
Hours/Week : 5	Credits : 4

COURSE OBJECTIVES:

- To impart the basic concepts of C sharp Console Applications
- To understand concepts of Arrays and Strings functions in C sharp console application
- To understanding about ADO.Net using Database Connectivity Programs

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Ability to work with the basic concepts of C sharp console applications
CO2	Ability to have knowledge about Array and String Function in c sharp console
CO3	Ability to understand basic concepts about c sharp windows application with programs
CO4	Ability to understand about ADO.Net using Database Connectivity Programs

Unit - I

Getting Started with Visual Basic 2010: Exploring the integrated development Environment - Creating Your First VB Application - Understanding the IDE Components - Handling Data: Variables - Variables as Objects –Constants – Arrays .

Unit - II

Visual Basic Programming Essentials: Flow-Control Statements - Writing and Using Procedures– Arguments - Basic Windows Controls: The TextBox Control - The ListBox, CheckedListBox, and ComboBox Controls - The ScrollBar and TrackBar Controls - Working with Forms: The Appearance of Forms - Designing Menus - More Windows Controls: The Common Dialog Controls - The RichTextBox Control- The TreeView and ListView Controls.

Unit - III

Working with Custom Classes and Controls: What Is a Class? (306-308) - Building the Minimal Class - Operator Overloading - Applied Object-Oriented Programming: Issues in Object-Oriented Programming – Inheritance - Extension Methods – Polymorphism - Who Can Inherit What?

Unit - IV

Working with the .NET Framework: What Is the Framework? - Using Snippets - The IO Namespace - Drawing and Painting - The Image Class – Printing - Handling Strings and Characters - Handling Dates and Time - Storing Data in Collections: Collection Types - The Dictionary Collection - The Hash Table Collection - The Sorted List Collection - Other Collections

Unit - V

Programming with ADO.NET: The Basic Data-Access Classes - Developing Data-Driven Applications: Storing Data in Datasets – Using the Entity Data Model.

TEXT BOOK:

1. Evangelos petroustes,” Mastering Microsoft Visual Basic 2010 “, Wiley-Dream Tech, 5th 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.

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE
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Program : MCA	
Course Title : Core :Computer Network	Course Code : 16PCA2C06
Year : I	Semester :II
Hours/Week : 5	Credits : 4

COURSE OBJECTIVES:

- To impart the basic concepts of uses of computer networks
- To understand concepts of Data link Layer Design
- To understanding about Network Layer and The Transport Service

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1.	Ability to work with the basic concepts of computer networks
CO2.	Ability to have knowledge about data link layer design
CO3.	Ability to understand basic concepts network layer and transport service
CO4.	Ability to understand about IP Classless command

Unit - I

Introduction: Uses of computer networks - Network hardware -Network software - The OSI Reference model – Example networks. .Physical Layer: Guided Transmission Media: Magnetic Media - Twisted pair - Coaxial cable - Fiber optics.. Wireless Transmission: The Electromagnetic spectrum – Radio transmission – Microwave transmission – Infrared and Millimeter waves – Light wave transmission. The Mobile Telephone system.

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.

Unit - II

Network Layer: Network Layer Design Issues - Services provided to the Transport Layer. Routing Algorithm: The Optimality Principle - Shortest path routing – Flooding. Hierarchical routing - Broadcast routing- Multicast routing.

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

Unit – III

Introduction to Ethernet –Ethernet sublayer – MAC address structure-Ethernet Frame Structure – Frame Fields- Ethernet transmission - Collision domain and Broadcast domain-layer 2

broadcaste - network segment Application Layer : Protocols – IP Address- Decimal to Binary conversion- IP Address Classes- Reserved IP Addresses – Public and Private address –Introduction to subnetting – Ipv6-ARP

Unit -IV

WAN Device- WAN Standard - Router startup sequence system configuration dialog –setting up global parameter - Hyper terminal –logging into the router –help function – editing command – command History -Router configuration – configuration modes – configuring a router name – configuring interface - Backup – password Recovery -Static Routing - default routing – verify and troubleshoot static routing -dynamic routing.

Unit - V

RIP Features- IP Classless command – RIP Configuration –Verifying and Troubleshooting RIP- load balancing with RIP - configuring IGRP –Troubleshooting IGRP -ICMP-Error report and Correction –Unreachable networks-ICMP Message Format-ACL –Create ACL – Wild Card Mask – Standard and Extended ACL –Named ACL –Firewall – Using ACL with Firewall –Restricting Virtual Terminal Access –Verifying ACL

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

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For candidates admitted from academic year 2019-2020 onwards under New CBCS.

Program	: MCA	Course Code	: 16PCA2C07
Course Title	: Core :Software Engineering	Semester	:II
Year	: I	Credits	: 4
Hours/Week	: 4		

COURSE OBJECTIVES:

- To impart the basic evolving role of software engineering
- To understand concepts data modeling and object oriented analysis
- To understanding about strategic approach to software testing

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Ability to work with the software engineering
CO2	Ability to have knowledge system engineering hierarchy
CO3	Ability to understand design concepts
CO4	Ability to understand about testing

Unit - I

The Evolving role of software – software – Legacy software – software Myths – Software Engineering - A Layered Technology – A process framework – Personal and Team process Models

Unit - II

Linear sequential Models – Software Process Model – Evolutionary Process Model – Computer Based System – The System Engineering Hierarchy – System Modeling.

Unit - III

Requirement Engineering Tasks – Developing Use-Cases – Building the analysis Model - Negotiating Requirements – Validating Requirements Requirement Analysis – Data Modeling Concepts – Object Oriented Analysis.

Unit - IV

Design Concepts – The Design Model - Pattern Based software design – Architectural styles and Patterns – Architectural Design – Mapping Dataflow into a software architecture.

Unit - V

A Strategic Approach to software Testing – The strategies for conventional software – Validation Testing – System Testing – Software Testing Fundamentals – Basis Path Testing – control structure testing - Block Box Testing-Case studies.

TEXT BOOKS:

1. Roger S.Pressman” Software Engineering A Practitioner’s Approach “,6th 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.

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Program : MCA
Course Title : Core :Multimedia -I (Photoshop and Illustrator)
Course Code : 16PCA2C08
Year : I **Semester** :II
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To make the students to be aware of the basic Photoshop
- To make them to understand the painting and modes
- To understanding about working with Illustrator interface

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Understand the concepts Photoshop
CO2	Ability to have knowledge tools and painting
CO3	Ability to understand design illustrator
CO4	Apply the concepts to solve a real-time problem

Unit - I

Photoshop: Using the Photoshop Workspace , Navigating in Photoshop, Customizing the Interface and the Photoshop, Image Management, Opening, Duplicating and Saving Images , Saving an image to disk, File Format Roundup , Resampling and cropping, Using the analysis menu Tools, Creating Custom actions.

Unit - II

PAINTING AND RETOUCHING – Working in Different Color Modes , Basic Techniques, Brush Size and Shape , Filling and Stroking , Cloning and Healing , Retouching and Restoring Photographs . Selections, Masks, and Filters – Magnetic Selections Tools, Quick Mask Mode – Generating Masks Automatically, Looking at Filters – How Filters Work – Fading a Filter – Heightening Focus and Contrast - Blurring an Image – Understanding Noise Factors.

Unit - III

LAYERS, OBJECTS, AND TEXT: - Working with layers – Layer Basics – Creating and using Smart Objects – Applying Transformations – Masking and Layers, Blend Modes – Advanced Blending Options, Shapes and Styles, Mapping and Adjusting colors – Color Effects and Adjustments – Automatic Color effects and Corrections – Adjusting Hues and Colorizing Images – Making Custom Brightness Adjustments – Adjustments Layers, 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

Unit - IV

Illustrator: Working with Illustrator's interface – Navigating Around Your Document – Using Illustrator's Modes – Using the Edit Commands , Setting Up a New Document - Modifying the Setup of a Document – Art boards - Opening and Closing Illustrator Files - Saving Files – Export Command, Understanding Drawing and Painting Techniques - Working with Paths - Drawing Paths with Illustrator Tools , Making Basic Shapes - Working with the Flare Tool - Filling and Stroking Shapes - Creating Shapes with the Shape Builder Tool - Using Symbols , Working with the Swatches Panel - Using Transparency - Creating Gradients - Adding Realism with Mesh.

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 - 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, Adding a Transformation with Tools - Working with the Transform Panel -Working with Graphic Styles and Effects – Using Effects, 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.

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.

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

Program : MCA
Course Title : Core Practical: Visual Programming (.Net)
Course Code : 16PCA2CP4
Year : I **Semester** : II
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To impart the basic concepts of C sharp Console Applications
- To understand concepts of Arrays and Strings functions in C sharp console application
- To understand basic concepts about C sharp windows application with programs

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Ability to work with the basic concepts of C sharp console applications
CO2	Ability to have knowledge about Array and String Function in c sharp console
CO3	Ability to understand basic concepts about c sharp windows application with programs
CO4	Ability to understand about ADO.Net using Database Connectivity Programs

1. 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
2. Write a Vb.Net program Building a Simple File Editor
3. Write a Vb.Net program Controlling Visibility of Type Members, Sharing Methods and Data.
4. Write a Vb.Net program to Hiding Data Members, using Shared Members to Share Data, Implementing an Extension Method
5. Write a Vb.Net program defining an Interface, Implementing an Interface and creating an Abstract Class
6. 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
7. 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
8. Write a vb.net program Using the LINQ Query Operators, building Dynamic LINQ Queries
9. Write a vb.net program to create an MS Access Databases Queries Editor
10. Write a vb.net program to create a Cartoonizer - Convert Photos into Cartoon Like Images

11. Write a vb.net program to create a program for Decrypting Images
12. Write a vb.net program for Setting and retrieving a Dataset in a Hashtable
13. Write a vb.net program to implement Serialization to Persist TreeView Control
14. Write a vb.net program to create a Windows service.
15. Write a vb.net program to create a Drop-Down Calculator
16. Write a program to illustrate Multithreading with VB.NET
17. Write a program to perform Word Automation using VB.NET

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

Program : MCA
Course Title : Core Practical :Multimedia (Photoshop and Illustrator)
Course Code : 16PCA2CP5
Year : I **Semester** :II
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To make the students to be aware of the basic photoshop
- To make them to understand the painting and modes
- To understanding about working with Illustrator interface

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Understand the concepts photoshop
CO2	Ability to have knowledge tools and painting
CO3	Ability to understand design c illustrator
CO4	Apply the concepts to solve a real-time problem

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

ILLUSTRATOR LAB

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

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

Program	: MCA		
Course Title	: Core: Mini-Project		
Course Code	: 16PCA2CP6		
Year	: I	Semester	:II
Hours/Week	: 4	Credits	: 4

COURSE OBJECTIVES

Enable the Students to

1. Understand the importance of experimental analysis, scientific approach in solving problems of information Technology.
2. Educate and train the students on how to design the system and develop the system and prepare the reports.

COURSE OUTCOMES

After learning the course, the students will be able to

CO1	Identify a problem and select suitable software for implementation	K3 & K 4
CO2	Apply the problem-solving skill to solve the problem	K3 & K 4
CO3	Able to analyze and interpret the data to arrive at the expected results	K3 & K 4

1. Identifying research oriented/real life problems and solve them through the knowledge and skills acquired. Team work in Mini Projects helps in developing communication skills and improves inter personal relationships.
2. The Students are assigned to the project Supervisor and they are asked to submit an individual project report at the end semester. The Broader areas of the project are website creation, order processing, Billing Software, Multimedia, Artificial Intelligence, and Machine Learning based projects.
3. The project work done by the student is periodically reviewed.

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

Program : MCA
Course Title : Core : Developing Web Applications
Course Code : 19PCA3C01
Year : II **Semester** : III
Hours/Week : 5 **Credits** : 4

COURSE OBJECTIVES:

- To make the students aware of the basic concepts of HTML5, Responsive Form Design, ASP.Net and PHP & MySql.
- To make them understand the benefits and applications of ASP.Net and PHP
- To develop the web program writing and logical thinking skills.

COURSE OUTCOME :

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Know the basic idea to create a web page and web sites
CO2	Understand the concepts of developing Responsive web sites
CO3	Understand the program writing technique both in ASP.Net and PHP
CO4	Apply the concepts and develop programs to solve real-time web applications

Unit I

HTML5: Overview of HTML5 – HTML5 and its Essentials – Exploring New Features of HTML5 – Fundamentals of HTML – Working with Text– Organizing Text in HTML– Working with Links and URLs – Creating Tables – Working with Forms – Working with Multimedia.

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 - Exploring New Features of ASP.NET 4.0 - Developing a Web Application - Application Structure and State **Asp.Net 4.0 Controls:** Web Forms: Standard Controls (I) - Web Forms: Standard Controls (II) - Navigation Controls: Tree View, Menu, and Sitemap Path - Validation Controls -Introducing HTML Controls - Working with Database Controls

Unit IV

Introducing PHP – Using Variables and Operators – Controlling program flow – **Working with cookies, sessions and headers** – Working with arrays .

Unit V

Using functions and classes – **Date** and Time Functions – String Functions – Math Functions – Working with files and directories – Zip Functions – Mail Function – **Working with databases and SQL**

TEXT BOOKS:

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 BOOKS:

1. Matthew Mac Donald “ The Complete Reference ASP.NET” Tata McGRAW HILL.
2. <http://spoken-tutorial.org/>

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

Program : MCA
Course Title : Core : Open Source Application Development - Advanced Java-I
Course Code : 19PCA3C02
Year : II **Semester** : III
Hours/Week : 5 **Credits** : 4

COURSE OBJECTIVES:

- To make the students aware of the basic concepts of java programming .
- To make them understand the applet class, and frame.
- To develop the advanced level of JavaFX .

COURSE OUTCOME :

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Know the basic idea to create java applications
CO2	Understand the concepts of applet class , event handling, and Image
CO3	Understand the concepts of swing and Java FX
CO4	Apply the concepts to solve real-time advanced java applications

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

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

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

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

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

TEXT BOOK :

1. Herbert Schildt “ The Complete Reference Java”,9th Edition ,TATA McGraw Hill, 2014 .

REFERENCE BOOKS:

1. Herbert Schildt “ The Complete Reference-Java 2” 5th Edition ,TATA McGraw Hill,2002
2. www.spoken-tutorial.org.

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

Program : MCA
Course Title : Core : Networking Programming using Python
Course Code : 19PCA3C03
Year : II **Semester** : III
Hours/Week : 5 **Credits** : 4

COURSE OBJECTIVES:

- To create programs that accept user input and read and write to external files using python.
- To Create a Python application that accesses an API based on user input and processes and displays the JSON data that is returned.
- To understand the concept of Cisco APIC-EM enhances network management and performance software defined networking (SDN) and network programmability.

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Know the integration of python program in networking
CO2	Understand the functionalities of python based API & working principles of API based on user input and processes and displays the JSON
CO3	Acquire knowledge on Cisco APIC-EM and SDN.
CO4	Apply Packet Tracer tool to implement advanced Networking Concept.

Unit-I

Python: Introduction -Python Interpreter: Use Interactive Interpreter as a Calculator - Use Interpreter to Print a String -Open IDLE Interactive Interpreter -Write, Save, and Run Program -Data Types, Variables, and Conversions-Basic Data Types -Boolean Operators - Creating and Using a Variable -Concatenate Multiple String Variables -Converting Data Types -Lists-Dictionaries-User Input -The Input Function -If Functions and Loops-If/Else Function -If/Elif/Else Function - for loop -Create a While Loop

Unit-II

File Access -Read an External File -Remove Blank Lines from the Output - Copy File Content Into a List Variable -APIs and Parsing JSON-APIs and RESTful APIs - Application Programming Interface (API) with example-Web Services Interface using HTTP -RESTful API using HTTP -Anatomy of a RESTful Request -API Documentation - JSON and XML -JSON Response Data -XML Response Data -Parsing JSON with Python: Authenticating a RESTful Request -Get Your MapQuest API Key -Importing Modules -

Create Variables for API Request -Test the URL Request -Print the URL and Check the Status of the JSON Request -Test Status and URL Print Commands

Unit-III

Add User Input for Address -Test User Input -Add Quit Functionality -Test Quit Functionality -Parse and Display Trip Data -Test the Parsing and Formatting Functionality - Inspect the Maneuvers JSON Data -Add a For Loop to Iterate Through the Maneuvers JSON Data -Test JSON Iteration and Application Functionality -Check for Invalid User Input -Test Full Application Functionality

Unit-IV

Programming the APIC-EM- Introduction -Computer Requirements -Building an Industry Ecosystem with DevNet -Network Programmability Concepts-Control Plane and Data Plane -Traditional and SDN Architectures -The Cisco APIC Approach to SDN -The Cisco SDN Model with APIC-EM

Unit-V

REST APIs-REST API Review -Operation -REST Request Elements -REST Response Elements -Authenticating with the APIC-EM -Getting a Service Ticket with Python-Create a Host Inventory in Python - Create a Device Inventory in Python -Using the APIC-EM Path Trace API - Packet Tracer Programming: Routing protocol- RIP -EIGRP- OSPF- ACL : Standard ACL- Extended ACL- VLAN -Inter-VLAN

TEXT BOOK:

1. Ryan Tischer, Jason Gooley- Programming and Automating Cisco Networks: A guide to network programmability and automation in the data center, campus, and WAN, Cisco Press, 2016
2. Eric Chou- Mastering Python Networking, Packt Publishing Ltd, 2017
3. <https://www.netacad.com/group/landing/v2/learn/>

REFERENCE BOOK

1. Gowrishankar S, Veena A- Introduction to Python Programming, CRC Press, 2018
2. Steven F. Lott- Python Essentials, Packt Publishing Ltd, 2015
3. <https://1040239.netacad.com/courses/795906>

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

Program : MCA
Course Title : Core Practical : Developing Web Applications
Course Code : 19PCA3CP1
Year : II **Semester** : III
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To develop simple programs using HTML5, Responsive Form Design.
- To develop programs using ASP.Net and PHP & MySql.
- To develop web design, programs to create professional web developer.

COURSE OUTCOME :

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Understand the fundamental idea to create a web site.
CO2	Understand the concepts of developing Responsive web sites.
CO3	Identify the suitable program writing technique both in ASP.Net and PHP.
CO4	Apply the concepts to develop real-time web applications

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 create the Data Binding to an Arraylist.
11. Write the ASP.Net Program and display the employee details using xml binding.

12. Write a PHP program and find the factorial of n numbers?
13. Write a PHP program and sort the given array values?
14. Write a PHP program create, read and display the file using file directory functions?
15. Write a PHP program, post and display the data in same file using query string variable from the form design?

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

Program : MCA
Course Title : Core Practical: Open Source Application Development with Advanced Java-I
Course Code : 19PCA3CP2
Year : II **Semester** : III
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To make the students aware of the basic concepts of java programming .
- To make them understand the applet class, and frame.
- To develop the advanced level of JavaFX .

COURSE OUTCOME :

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Know the basic idea to create java applications
CO2	Understand the concepts of applet class , event handling, and Image
CO3	Understand the concepts of swing and Java FX
CO4	Apply the concepts to solve real-time advanced java applications

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**

For candidates admitted from academic year 2019-2020 onwards under New CBCS.

Program : MCA
Course Title : Core Practical : Network Programming using Python
Course Code : 19PCA3CP3
Year : II **Semester** : III
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To create simple input and output functions of python programs
- To Create a python application that accesses an API based on user input.
- To understand the network programming using python.

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Develop simple python programs with user input functionalities
CO2	Create the simple API that accepts python input scripts
CO3	Analyze the network data with python program
CO4	Apply Packet Tracer tool to implement real time network data analysis.

1. Write a program to Troubleshoot List and Dictionary Code
2. Create a Script to Collect Personal Information
3. Create a Script to Allow User to Add Devices
4. Test the URL Request and Status
5. Test User Input
6. Getting a Service Ticket with Python
7. Create a Host Inventory in Python
8. Create a Network Device Inventory in Python
9. Using the APIC-EM Path Trace API
10. Write a program to configure RIP protocol
11. Write a program to configure EIGRP protocol
12. Write a program to configure OSPF protocol
13. Write a program to configure Standard ACL
14. Write a program to configure Extended ACL
15. Write a program to configure VLAN
16. Write a program to configure Traditional Inter-VLAN routing
17. Write a program to configure Router-on-a-stick Inter-VLAN routing
18. Write a program to configure Inter-VLAN routing using multilayer switch

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

Program	: MCA		
Course Title	: Core: Mini-Project		
Course Code	: 19PCA3CP4		
Year	: II	Semester	: III
Hours/Week	: 4	Credits	: 4

COURSE OBJECTIVES

Enable the Students to

1. Understand the importance of experimental analysis, scientific approach in solving problems of information Technology.
2. Educate and train the students on how to design the system and develop the system and prepare the reports.

COURSE OUTCOMES

After learning the course, the students will be able to

CO1	Identify a problem and select suitable software for implementation	K3 & K 4
CO2	Apply the problem-solving skill to solve the problem	K3 & K 4
CO3	Able to analyze and interpret the data to arrive at the expected results	K3 & K 4

4. Identifying research oriented/real life problems and solve them through the knowledge and skills acquired. Team work in Mini Projects helps in developing communication skills and improves inter personal relationships.
5. The Students are assigned to the project Supervisor and they are asked to submit an individual project report at the end semester. The Broader areas of the project are website creation, order processing, Billing Software, Multimedia, Artificial Intelligence, and Machine Learning based projects.
6. The project work done by the student is periodically reviewed.

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

Program : MCA
Course Title : Core : Enterprise Web Applications Development
Course Code : 17PCA4C04
Year : II **Semester** : IV
Hours/Week : 4 **Credits** : 4

COURSE OBJECTIVES:

- To make the students aware of the basic concepts of JQuery.
- To make them understand the Entity Framework, AJAX Control Toolkit and Services.
- To develop the advanced level of web application using MVC Framework.

COURSE OUTCOME :

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Know the basic idea to create web applications
CO2	Understand the concepts of scripting languages using JQuery
CO3	Understand the concepts of MVC framework in ASP.net and PHP
CO4	Apply the concepts to solve real-time advanced web applications

Unit I

JQuery: Introduction to JQuery – Element getters and setters– Altering document structure– Events and Animated Effects– Ajax and Utility functions – JQuery with plugins.

Unit II

Accessing Data in Asp.net 4.0: Working with Database Controls - LINQ Queries - ADO.NET Entity Framework

Unit III

Building Asp.net 4.0 Enterprise Applications: ASP.NET AJAX Control Toolkit - ASP.NET Web Services -WCF Services -ASP.NET MVC Framework

Unit IV

YII Framework: Meet Yii– Getting started– Creating the initial trackstar application– Project CRUD– Adding Tasks– User management and authentication.

Unit V

Administering Asp.net 4.0: Developing Websites Compliant with Web Standards - Application Tracking – Security and Cryptography in ASP.NET - Implementing Crystal Reports in ASP.NET 4.0 - Deploying Web applications.

TEXT BOOKS:

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
3. Web Application Development with Yii and PHP, Jeffrey Winesett, Packt Publications – Second Edition.

REFERENCES BOOKS:

1. Matthew Mac Donald “ The Complete Reference ASP.NET” Tata McGRAW HILL.
2. <http://spoken-tutorial.org/>

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

Program : MCA	
Course Title : Core : Internet of Things	Course Code : 17PCA4C05
Year : II	Semester : IV
Hours/Week : 4	Credits : 4

COURSE OBJECTIVES:

- To know about the IoT Applications.
- To develop simple programs to collect sensor data.
- To analyze the real time sensor data with Arduino code.

COURSE OUTCOME :

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Understand the basic concepts of basic sensors and IoT devices
CO2	Understand the concepts of real time sensor data signals
CO3	Analyze the real time problems with sensors
CO4	Apply the concepts to solve real-time problems using IoT applications

Unit I

Introduction – Purpose and Features – Advantages. Arduino: What is Arduino – Board Description – Program Structure – Data Types – Variables and Constants– Operators – Control Statements and Functions – Loops - Strings and String Object –Timing Functions– Arrays. Function Library: I/O Functions – Character Functions – Math Library – Trigonometric Functions.

Unit II

Pulse with Modulation– Random numbers – Interrupts – communication – Inter-integrated Circuit – Serial Peripheral Interface – Keyboard Serial -Blinking LED – Fading LED – Serial and parallel Connections – Connecting Switch and Resistors.

Sensors: Talking with Sensors – IR Sensor – PIR Sensor – Ultrasonic Sensor – humidity and temperature Sensor – Photo resistor – Moisture Sensor – Vibration Sensor – Touch Sensor – Smoke Sensor.

Unit III

Actuation: Servo Motor– Potentiometer – Relay shield. -Communication and Integration: Sending and Receiving Data using Bluetooth Sensor , -GSM Module – Calls and Message in GSM – Working with Wi-Fi Module (NodeMCU).

Unit IV

Raspberry pi Integrating with Python: Introduction – Raspberry Pi I Architecture – Specifications Overview and Models. Serial Communication – Blinking LED – Fading LED – Serial and parallel Connections – Connecting Switch and Resistors. **Sensors:** Talking with Sensors – IR Sensor – PIR Sensor – Ultrasonic Sensor – humidity and temperature Sensor – Photo resistor – Moisture Sensor – Vibration Sensor – Touch Sensor – Smoke Sensor. **Actuation:** Servo Motor– Potentiometer – Relay shield.

Unit V

Data –Send–Receive–Storage using Mobile App – Data Transfer to Database –Data Display using Dashboard .

Text Books:

1. J. Biron and J. Follett, "Foundational Elements of an IoT Solution", O'Reilly Media, 1st Edition, 2016.
2. "Funduino Tutorials for Arduino", Funduino Service Team ,Edition 2016
3. Scott Fitzgerald and Michael Shiloh,"The Arduino Projects Book",3rd Edition ,2015

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.

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

Course: MCA
Year : II

Subject Code: 16PCA4EL1
Semester : IV

Elective : Open Source Application Development - Advanced Java –II

COURSE OBJECTIVES

1. To enable students to learn about the basic features of java Servlets
2. To learn how to program using Servlets
3. To develop the basic applications using Servlets
4. To make them understand the JSP.

COURSE OUTCOMES

After learning the course, the students will able to

CO1	Know the basic idea to create Servlets applications
CO2	Understand the concepts of Servlets
CO3	Understand then JSP
CO4	Apply the concepts to solve real-time advanced JSP

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 “ 2nd Edition , Robert Eckstein and Paula Ferguson, (Unit I ,II,and III)
2. Hanna “ The Complete Reference jsp2.0 “5th Edition , TATAMcGraw Hill (Unit IV and V)

References Book :

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

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

Program : MCA
Course Title : Core Practical : Enterprise Web Applications Development
Course Code : 17PCA4CP5
Year : II **Semester** : IV
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To develop simple programs using JQuery and AngularJS.
- To develop programs using ASP.Net Entity Framework, AJAX Control Toolkit and Services.
- To develop the advanced level of web application using MVC Framework.

COURSE OUTCOME :

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Understand the concepts of scripting languages using JQuery and AngularJS
CO2	Understand the concepts of ASP.Net Entity Framework
CO3	Understand the concepts of MVC framework in ASP.net and PHP
CO4	Apply the concepts to solve real-time advanced web applications

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 the ASP.Net Program and view student database in grid view using access datasource.
5. Write the ASP.Net Program and add the two number using ajax extensions update pane.
6. Write the ASP.Net Program and display the product details in gridview without using sql server sqldatasource control.
7. Write the ASP.Net Program and display the student details in gridview without accessdatasource control using ms-access.
8. Write the ASP.Net Program to create student details using entity framework database first approach.
9. Write the ASP.Net program to create a simple database connection with save and view student details.
10. Write the ASP.Net MVC Program to create and display the student information.
11. Write a PHP program and perform MVC Concept using Yii and display the student

information without using database.

12. Write a PHP program and perform MVC Concept using Yii and display the student information with database eloquent.

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

Program : MCA
Course Title : Core Practical : Internet of Things
Course Code : 17PCA4CP6
Year : II **Semester** : IV
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To know about the simple IoT Applications.
- To develop simple programs to collect sensor data.
- To analyze the real time sensor data with Arduino code.

COURSE OUTCOME :

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Create simple application with basic sensors.
CO2	Develop IoT programs to receive and store data
CO3	Create simple application to analyze the sensor data
CO4	Apply the IoT application to solve real-time problems.

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

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

COURSE OBJECTIVES

1. To enable students to learn about the basic features of java Servlets
2. To learn how to program using Servlets
3. To develop the basic applications using Servlets
4. To make them understand the JSP.

COURSE OUTCOMES

After learning the course, the students will able to

CO1	Know the basic idea to create Servlets applications
CO2	Understand the concepts of Servlets
CO3	Understand then JSP
CO4	Apply the concepts to solve real-time advanced JSP

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.**

Program	: MCA		
Course Title	: Core: Mini-Project		
Course Code	: 16PCA4CP7		
Year	: III	Semester	:IV
Hours/Week	: 4	Credits	: 4

COURSE OBJECTIVES

Enable the Students to

3. Understand the importance of experimental analysis, scientific approach in solving problems of information Technology.
4. Educate and train the students on how to design the system and develop the system and prepare the reports.

COURSE OUTCOMES

After learning the course, the students will be able to

CO1	Identify a problem and select suitable software for implementation	K3 & K 4
CO2	Apply the problem-solving skill to solve the problem	K3 & K 4
CO3	Able to analyze and interpret the data to arrive at the expected results	K3 & K 4

1. Identifying research oriented/real life problems and solve them through the knowledge and skills acquired. Team work in Mini Projects helps in developing communication skills and improves inter personal relationships.
2. The Students are assigned to the project Supervisor and they are asked to submit an individual project report at the end semester. The Broader areas of the project are website creation, order processing, Billing Software, Multimedia, Artificial Intelligence, and Machine Learning based projects.
3. The project work done by the student is periodically reviewed.

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

Program : MCA
Course Title : Core : Data Science Using R
Course Code : 19PCA5C06
Year : III **Semester** : V
Hours/Week : 4 **Credits** : 4

COURSE OBJECTIVES:

- To make aware of the basic concept R language
- To understand the concept of introduction to R data interfaces
- To develop the Data analytics using R

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Know the basic idea to create R applications
CO2	Understand the concepts of data interfaces
CO3	Understand the concepts of charts and graphs
CO4	Apply the concepts to solve real-time android applications

Unit-I

Overview of R-Local Environment Setup- Basic Syntax- Data Types- Variables- Operators- Decision making- Loops-Functions-Strings-Vectors-Lists-Matrices- Arrays-Factors-Data Frames-Packages- Data Reshaping

Unit-II

R Data Interfaces : Pie Charts-Excel File-Binary Files-XML Files-JSON Files-Web Data-Databases

Unit-III

Charts & Graphs :- Pie Charts-Bar Charts - Boxplots-Histograms- Line Graphs- Scatterplots-R Statistics Examples:-Mean, Median and Mode-Linear Regression-Multiple Regression-Logistic Regression

Unit-IV

Normal Distribution-Binomial Distribution-Poisson Regression-- Analysis of Covariance-Time Series Analysis-Nonlinear Least Square-Decision Tree-Random Forest-Survival Analysis-Chi Square Test

Unit-V

Data analytics -Numpy -Data analysis pandas - Data Visualization with matplotlib-Data visualization with seaborn -Introduction to deep learning

TEXTBOOKS:

1. Roger D. Peng ,R Programming for Data Science , Lean Publishing, 2015
2. <https://www.tutorialspoint.com/>

REFERENCE BOOK

1. Michael J. Crawley, The R Book, John Wiley & Sons, 2007

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

Program : MCA
Course Title : Core :Open Source Application Development with Android and Content Management
Course Code : 19PCA5C07
Year : III **Semester** : V
Hours/Week : 4 **Credits** : 4

COURSE OBJECTIVES:

- To make aware of the basic concept android
- To understand the concept of introduction to XML and android animation
- To develop the telephony and notifications and alarms

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Know the basic idea to create android applications
CO2	Understand the concepts of XML and intents
CO3	Understand the concepts android animation
CO4	Apply the concepts to solve real-time android applications

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

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.

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

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

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

TEXT BOOK :

1. Wallace Jackson, Android Applications for Absolute Beginners, Publisher Apress, Edition Third ,Year 2014
2. W. Frank Ableson Robi Sen Chris King “Android in Action” .2nd Edition , Manning Publications,2011.

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

Program	: MCA	Course Code	: 19PCA5EL2
Course Title	: Elective : AngularJS and DevOps	Semester	: V
Year	: III	Credits	: 3
Hours/Week	: 5		

COURSE OBJECTIVES:

- To make the students aware of the basic concepts of normal Angular JS and Node.js.
- To make them understand the concept of Angular 4 CLI and its applications.
- To develop the web program writing and web oriented logical thinking skills.

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Know the basic idea to create a web page or web sites using Angular JS
CO2	Understand the concepts of developing Node.js based web sites
CO3	Understand the program writing technique using Angular 4 CLI
CO4	Apply the concepts and develop programs to solve real-time web applications

Unit I

AngularJS: Introduction – Angular Expressions – Angular Modules – Angular Directives – Angular Model – Angular Data Binding – Angular Controllers – Angular Filters – Angular SQL

Unit II

Node.js: Introduction – Get Started – Modules – NPM – File System – Events – Node.js with MySQL.

Unit III

Angular 4 CLI: Introduction to Angular – Angular Architecture –Environment Setup – Project Setup – Components – Module – Data and Event Binding

Unit IV

Styles Binding in Components – Advanced Component Features – Forms – Template Driven Forms – Reactive Forms – Pipes – Custom Directives – Dependency Injection

Unit V

Services in Angular – Angular Routing – Angular Modules – Performing CRUD Operations as in Realtime Angular Application – Case Studies.

TEXT BOOKS:

1. Andrew Grant, “Beginning AngularJS”, Published by Apress.
2. Oswald Campesato, “Angular 4 Pocket Primer”, Published by David Pallai, Mercury Learning and Information LLC, 2018

REFERENCES BOOKS:

1. Tutorials Point, “Angular 4”, Tutorials Point Book, 2017.
2. <http://www.w3schools.com>
3. <https://www.tutorialspoint.com/angular4/>

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

Program : MCA
Course Title : Core Practical : Data Science Using R
Course Code : 19PCA5CP8
Year : III **Semester** : V
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To make aware of the basic concept R language
- To understand the concept of introduction to R data interfaces
- To develop the Data analytics using R

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Know the basic idea to create R applications
CO2	Understand the concepts of data interfaces
CO3	Understand the concepts of charts and graphs
CO4	Apply the concepts to solve real-time android applications

1. Write a R language using data frames.
2. Write a R language using built-in function
3. To Create a matrix taking a vector of numbers as input using R
4. Write a R language we can join multiple vectors to create a data frame using the cbind()function. Also we can merge two data frames using rbind() function.
5. Write a R language using detting and setting the working directory
6. Write a R language verify and load the "xlsx" package
7. Write a R language for simple pie-chart is created using just the input vector and labels
8. Write a R language using boxplot with notch
9. Write a R language using mean, median and mode
10. Write a R language program using linear regression
11. Write a R language program using multiple regression
12. Write a R language program using logistic regression
13. Write a R language program using normal distribution
14. Write a R language program using binomial distribution
15. Write a R language program using poisson regression

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

Program : MCA
Course Title : Core Practical : Open Source Application Development with Android and Content Management
Course Code : 19PCA5CP9
Year : III **Semester** : V
Hours/Week : 4 **Credits** : 3

COURSE OBJECTIVES:

- To make the students aware of the basic android program .
- To make them to implement android telephony manager .
- To develop the android application .

COURSE OUTCOME :

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Know the basic android program
CO2	Implement simple applications with Notifications and alarms
CO3	Analyze the android locations with map
CO4	Apply the android concepts to solve real-time problems

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.

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

Program	: MCA	Course Code	: 19PCA5EP2
Course Title	: Elective : AngularJS and DevOps	Semester	: IV
Year	: II	Credits	: 3
Hours/Week	: 4		

COURSE OBJECTIVES:

- To develop basic concepts of AngularJS and Node.js.
- To develop programs in the concept of Angular 4 CLI and its applications.
- To develop web programs skills in Angular4, AngularJS and Node.js.

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Know the basic idea to create a web program using AngularJS
CO2	Understand the concepts of developing Node.js based web applications
CO3	Understand the program writing technique using Angular 4 CLI
CO4	Apply the concepts and develop programs to solve real-time web applications

1. Write AngularJS program and perform AngularJS Directives with valid HTML5 Code.
2. Write AngularJS program and perform AngularJS Expression, using a variable.
3. Write AngularJS program and perform AngularJS Controller.
4. Write AngularJS program to perform ng-app, ng-init and ng-bind options.
5. Write AngularJS program and perform AngularJS module.
6. Write AngularJS program and perform AngularJS Filters by using directive filter orderBy.
7. Write Node.js program and perform event handler operations.
8. Write Node.js program and perform Node.js and MySQL.
9. Write the steps to configure Angular 4 CLI with NPM Installation.
10. Write the Angular4 Program and perform the usage of directives.
11. Write the Angular4 Program and display the first contact.
12. Write the Angular4 Program and list of contacts derived from the components.
13. Write the Angular4 Program and route to your first component.
14. Write the Angular4 Program and accessing route parameters.
15. Write the Angular4 Program and fetch data using Http.
16. Write the Angular4 Program and perform two way data binding and sending data.

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

Program	: MCA		
Course Title	: Core: Mini-Project		
Course Code	: 19PCA5P10		
Year	: III	Semester	:V
Hours/Week	: 4	Credits	: 4

COURSE OBJECTIVES

Enable the Students to

5. Understand the importance of experimental analysis, scientific approach in solving problems of information Technology.
6. Educate and train the students on how to design the system and develop the system and prepare the reports.

COURSE OUTCOMES

After learning the course, the students will be able to

CO1	Identify a problem and select suitable software for implementation	K3 & K 4
CO2	Apply the problem-solving skill to solve the problem	K3 & K 4
CO3	Able to analyze and interpret the data to arrive at the expected results	K3 & K 4

1. Identifying research oriented/real life problems and solve them through the knowledge and skills acquired. Team work in Mini Projects helps in developing communication skills and improves inter personal relationships.
2. The Students are assigned to the project Supervisor and they are asked to submit an individual project report at the end semester. The Broader areas of the project are website creation, order processing, Billing Software, Multimedia, Artificial Intelligence, and Machine Learning based projects.
3. The project work done by the student is periodically reviewed.

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

Program	: MCA		
Course Title	: Project Work and Viva-Voce		
Course Code	: 19PCA6CPR		
Year	: III	Semester	:VI
Hours/Week	: 20	Credits	: 20

COURSE OBJECTIVES

Enable the Students to

1. Understand the importance of experimental analysis, scientific approach in solving problems of information Technology.
2. Educate and train the students on how to design the system and develop the system and prepare the reports.

COURSE OUTCOMES

After learning the course, the students will be able to

CO1	Identify a problem and select suitable software for implementation	K3 & K 4
CO2	Apply the problem-solving skill to solve the problem	K3 & K 4
CO3	Able to analyze and interpret the data to arrive at the expected results	K3 & K 4

1. The Final Year Students are assigned to the project Supervisor and they are asked to submit an individual project report at the end semester.
2. The Broader areas of the project are website creation, order processing, Billing Software, Multimedia, Artificial Intelligence, and Machine Learning based projects.
3. The student has to approach the nearby companies to get approval from the company to undergo his project work for the period of SIX months.
4. The students have to submit the project Completion Letter from the organization.
5. The project work done by the student is periodically reviewed.

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

Course: MCA

Subject Code: 16PCA4EL1

Year : II

Semester : IV

Elective : **Dreamweaver, Wordpress And Joomla**

COURSE OBJECTIVES

1. To make aware of the basic concept Dreamweaver
2. To understand the concept of introduction to Wordpress
3. To understand the concept of introduction to Joomla
4. To understand the performance and security for Joomla

COURSE OUTCOMES

After learning the course, the students will able to

CO1	Know the basic idea to create Dreamweaver applications
CO2	Understand the concepts of WordPress
CO3	Understand design patterns and Joomla
CO4	Understand the concepts 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)

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

Course: MCA

Course Title: Elective Practical: Dreamweaver, Wordpress And Joomla

Subject Code: 16PCA4EP1

Year : II

Semester : IV

COURSE OBJECTIVES

1. To make aware of the basic concept Dreamweaver
2. To understand the concept of introduction to Wordpress
3. To understand the concept of introduction to Joomla
4. To understand the performance and security for Joomla

COURSE OUTCOMES

After learning the course, the students will able to

CO1	Know the basic idea to create Dreamweaver applications
CO2	Understand the concepts of WordPress
CO3	Understand design patterns and Joomla
CO4	Understand the concepts Joomla

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.

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

Course : MCA

Subject Code: 16PCA4EL1

Year : III

Semester : V

Elective : **Software Development Lifecycle Management**

COURSE OBJECTIVES

1. Recognize that there are different methodologies that can be used for software development.
2. Appreciate all stages of the software development lifecycle
3. To make aware of the basic concept software project
4. To understand the concept of introduction to strategic assessment

COURSE OUTCOMES

After learning the course, the students will able to

CO1	Know the basic idea to create software project
CO2	Understand the concepts of strategic assessment
CO3	Understand the concepts monitoring and control
CO4	Apply the concepts to solve real-time in software project

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 ”. 2nd Edition,TataMcGra-Hill Edition 2001.

References Book :

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

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

Course : MCA

Subject Code: 16PCA4EP1

Year : II

Semester : IV

Elective Practical: Software Development Lifecycle Management

COURSE OBJECTIVES

1. Recognize that there are different methodologies that can be used for software development.
2. Appreciate all stages of the software development lifecycle
3. To make aware of the basic concept software project
4. To understand the concept of introduction to strategic assessment

COURSE OUTCOMES

After learning the course, the students will able to

CO1	Know the basic idea to create software project
CO2	Understand the concepts of strategic assessment
CO3	Understand the concepts monitoring and control
CO4	Apply the concepts to solve real-time in software project

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: 19PCA5EL2

Year : III

Semester : V

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

COURSE OBJECTIVES

1. To make aware of the basic concept software quality assurance
2. To understand the concept of introduction software testing process
3. To understand the concept of introduction to skill test
4. To understand the concept of software testing tools

COURSE OUTCOMES

After learning the course, the students will able to

CO1	Know the basic idea to create software quality assurance
CO2	Understand the concepts of testing process
CO3	Understand the concepts monitoring and skill test
CO4	Apply the concepts to solve real-time in software quality

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” 5th 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 “, 3rd Edition , Willey India Edition .

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Course: MCA

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

Subject Code: 19PCA5EP2

Year : II

Semester : IV

COURSE OBJECTIVES

1. To make aware of the basic concept software quality assurance
2. To understand the concept of introduction software testing process
3. **To understand the concept of introduction to skill test**
4. To understand the concept of software testing tools

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CO1	Know the basic idea to create software quality assurance
CO2	Understand the concepts of testing process
CO3	Understand the concepts monitoring and skill test
CO4	Apply the concepts to solve real-time in software quality

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

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

Course : MCA

Subject Code: 19PCA5EL2

Year : III

Semester : V

Elective : Advanced File system Management and User Administration

COURSE OBJECTIVES

1. To make aware of the basic concept boot sequence overview
2. To understand the concept of introduction virtual network computing
3. To understand the concept of introduction to anaconda
4. To understand the gateway and configuring routes

COURSE OUTCOMES

After learning the course, the students will able to

CO1	Know the basic idea to create boot sequence overview
CO2	Understand the concepts of virtual network computing
CO3	Understand the concepts anaconda
CO4	Apply the concepts to solve real-time in administration

UNIT - I

Boot sequence overview-Boot loader components-GRUB- Kernal Initialization- init initialization - Run levels- Controlling Services (page no 3-14)- RMP Package Manager- Installing and Removing software-Updating a Kernal 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: 19PCA5EP2

Year : III

Semester : V

Elective Practical: Advanced File system Management and User Administration

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CO4	Apply the concepts to solve real-time in 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