



APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
CET Campus, Thiruvananthapuram, Kerala-695016

SYLLABUS
For
MASTER OF COMPUTER APPLICATIONS
(LATERAL ENTRY)

Semester 1

Master of Computer Applications (LE)		Hours / week			IA Marks	ESE Marks	Total	Credits	Exam Slot
Course No	Course	L	T	P					
RLMCA201	Computer Networks	3	1	-	40	60	100	4	A
RLMCA203	Software Engineering	3	1	-	40	60	100	4	B
RLMCA205	Database Management Systems	3	1	-	40	60	100	4	C
RLMCA207	Design and Analysis of Algorithms	3	1	-	40	60	100	4	D
RLMCA209	Web Programming	3	1	-	40	60	100	4	E
RLMCA231	Database Lab	-	-	4	100	-	100	1	S
RLMCA233	Web Programming Lab	-	-	4	100	-	100	1	T
		15	5	8	400	300	700	22	



Course No.	Course Name	L-T-P-Credits	Year of introduction
RLMCA201	Computer Networks	3-1-0-4	2016
Course Objectives			
<ul style="list-style-type: none"> To introduce students to modern computer networks To lay foundation for internet technologies and related topics 			
Syllabus			
Basic communications model - Protocol layers and service models - Transport Layer Protocols - Network Layer Protocols - Link layer and Physical Layer – Wireless and mobile networks – Threats and attacks – VPNs -Network management.			
Expected Outcome			
<ul style="list-style-type: none"> Students will gain proficiency in various network protocols and models. 			
References			
<ol style="list-style-type: none"> James F Kurose and Keith W Ross, “Computer Networking: A Top - Down Approach”, Pearson Education; 5th Edition (2012). Larry Peterson, Bruce Davie, “Computer Networks, A systems Approach”, Morgan Kaufmann Publishers, 5th Edition (2011). Behrouz A Forouzan, Firouz Mosharraf, “Computer Networks: A top down Approach”, McGraw Hill Education, 1st Edition (2011). Uyless Black, “Computer Networks: Protocols, Standards and Interface”, Prentice Hall India Learning Private Limited, 8th Edition (2015). William Stallings, “Foundations of Modern Networking: SDN, NFV, QoE, IoT, and Cloud”, Pearson Education, 1st Edition (2016). Kevin R. Fall, W. Richard Stevens, “TCP/IP Illustrated, Volume 1 -The Protocols”, Pearson Education, 2nd Edition (2014). 			
Suggested MOOC			
<ol style="list-style-type: none"> https://lagunita.stanford.edu/courses/Engineering/Networking-SP/SelfPaced/info (Students can be asked to take this self-paced course as an assignment) 			

Course Plan			
Module	Contents	Hours Allotted	% of marks in End-Semester Examination
I	Basic communications model - Protocol layers and service models - Basic definitions - OSI model - Internet protocols, the role of standards organizations, History of Internet, Security in the Internet, concept of Quality of Service (QoS).	8	15
II	Application layer protocols - Client-server as a key model - Network application architecture, Web, HTTP, FTP, SMTP, POP3, and DNS, Peer-to-peer file sharing networks, Introduction to Sockets programming.	7	15
FIRST INTERNAL EXAM			
III	Transport Layer Protocols: Introduction to transport layer, Multiplexing and demultiplexing, Principles of Reliable data transfer - Stop-and-wait and Go-back- N design and evaluation, Connection oriented transport TCP, Connection less transport UDP, Principles of congestion control - efficiency and fairness.	8	15
IV	Network Layer Protocols: Virtual circuits and datagrams, Principles of routing, internet protocol Ipv4 and Ipv6, Routing algorithms :Link-state and distance vector routing, Routing on the internet RIP OSPF and BGP, Multicast routing.	7	15
V	Link layer and Physical Layer: Introduction to link layer - Error detection (parity, checksum, and CRC), Multiple access protocols (collision and token based), IEEE 802.3 Ethernet, Switching and bridging, Media, Signal strength and interference. Data encoding.	8	20
SECOND INTERNAL EXAM			
VI	IEEE 802.11 Wi-Fi, Bluetooth, and cellular networks, Threats and attacks, Firewalls, VPNs, Introduction to network management, SNMP, Overview of tools and troubleshooting, Traffic analysis tools and Configuration management. <i>Note: Introduction to network tools like Wireshark, Snort etc. may be given as assignments/tutorials.</i>	7	20
END SEMESTER EXAM			

Course No.	Course Name	L-T-P Credits	Year of Introduction
RLMCA203	Software Engineering	3-1-0-4	2016
Course Objectives			
<ul style="list-style-type: none"> The aim of the course is to assist the student in understanding the basic theory of software engineering, and to apply these basic theoretical principles to a software development project. 			
Syllabus			
Introduction to Software Engineering, Fundamentals of Agile Development, Scrum Framework, Industry Trends.			
Expected Outcome			
At the end of the course, students would			
<ul style="list-style-type: none"> Learn the theory and foundations of software engineering. Learn the different process models and choose the best model for their project Be able to construct requirement models Be able to Understand the different development practices and its advantages Be able to create test cases and implement different testing strategies Understand the environment and work culture in a software organization 			
References			
<ol style="list-style-type: none"> Pressman, R.S., "Software Engineering: A Practitioner's Approach", McGraw Hill SE, 7th Edition, (2010). Rod Stephens, "Beginning Software Engineering", Wrox Series, Wiley India Pvt Ltd (2015). Ken Schwaber, Mike Beedle, "Agile Software Development with Scrum", Pearson (2008). Andrew Hunt, David Thomas, "The Pragmatic Programmer: From Journeyman to Master", Pearson India, 1st Edition (2008). Robert C. Martin, "Agile Software Development, Principles, Patterns and Practices", Prentice Hall Imprint, Pearson Education, 2nd Edition (2002). Lisa Crispin, Janet Gregory, "Agile Testing: A Practical Guide for Testers and Agile Teams", Addison Wesley Professional, 1st Edition (2008). Alistair Cockburn, "Agile Software Development: The Cooperative Game", Addison Wesley, 2nd Edition (2006). Mike Cohn, "User Stories Applied: For Agile Software Dvelopment", Addison Wesley, 1st Edition, (2004). RyPress "Ry's Git Tutorial" (Free e-book) 			
Suggested MOOC			
<ul style="list-style-type: none"> Introduction to DevOps (https://www.edx.org/course/introduction-devops-microsoft-dev212x) 			

Course Plan			
Module	Contents	Hours Allotted	% of marks in End-Semester Examination
I	Introduction to Software Engineering - What is Software Engineering - Why is software engineering important, Details around requirements gathering, Software design, Development, Testing, Deployment, Maintenance. Planning phase – project planning objective, software scope, empirical estimation, models, COCOMO, staffing and personal planning.	8	15
II	Software Engineering models - Predictive software engineering models and its application - Model Approaches – Prerequisites - predictive and adaptive waterfall - waterfall with feedback - Sashimi - incremental waterfall - V model - System development life cycle - Iterative vs Predictive – prototypes - Spiral - unified process - Cleanroom - Rapid Application development principles – risk management.	7	20
FIRST INTERNAL EXAM			
III	<p>Fundamentals of Agile Development - Introduction to agility, Agile Principles, Overview of Scrum, Extreme Programming, Feature Driven development, Lean Software Development, Agile project management.</p> <p>Design and development practices in Agile projects, Test Driven Development, Continuous Integration, Refactoring, Pair Programming, Simple Design, User Stories, Agile Testing, Agile Tools - Agile design practices, Role of design Principles including Single Responsibility Principle, Open Closed Principle, Liskov Substitution Principle, Interface Segregation Principles, Dependency Inversion Principle in Agile Design, Need and significance of Refactoring, Refactoring Techniques.</p> <p>The Agile lifecycle and its impact on testing, Test-Driven Development (TDD), JUnit framework and tools for TDD, Testing user stories - acceptance tests and scenarios, Planning and managing testing cycle, Exploratory testing, Risk based testing, Regression tests, Test Automation, Tools to support the Agile tester.</p>	8	20
IV	Scrum Framework - Introduction to Scrum, Project phases, Agile Estimation, Planning game, Product backlog, Sprint backlog, Iteration planning, User story definition, Characteristics and content of user stories, Acceptance tests and Verifying stories, Project velocity, Burn down chart, Sprint planning and retrospective Daily scrum, Scrum roles - Product Owner, Scrum Master, Scrum Team, Scrum case study, Tools for Agile project management	7	15
V	Pragmatic Programming in Software Engineering - Essential pragmatism in software engineering - Code maintainability - design by contract - assertive programming - Writing maintainable code - Ruthless testing – pride.	8	15
SECOND INTERNAL EXAM			

VI	Industry Trends - Introduction to DevOps - A unified process between development and operations - Continuous Integration (CI), continuous testing, and continuous deployment - Configuration management, release management, and monitoring and learning	7	15
END SEMESTER EXAM			



Course No.	Course Name	L-T-P-Credits	Year of Introduction
RLMCA205	Database Management Systems	3-1-0-4	2016
Course Objectives			
<ul style="list-style-type: none"> The course will assist the students in developing and managing efficient and effective database applications that requires understanding the fundamentals of database management systems, techniques for the design of databases, and principles of database administration. 			
Syllabus			
Introduction of database systems - Data modeling using Entity Relationship Model - Extended E-R features - The Relational model -Relational Query Languages. Introduction to SQL - Intermediate SQL - Advanced SQL - Database Design - Functional Dependencies - Foundations of Database Transaction Processing - Concurrency Control in databases - Overview of Data Mining and Data Warehousing Concepts.			
Expected outcome			
Upon completing this course, the student would:			
<ul style="list-style-type: none"> Understand the fundamentals of relational, object-oriented, and distributed database systems including: data models, database architectures, and database manipulations. Understand the theories and techniques in developing database applications and be able to demonstrate the ability to build databases 			
References			
<ol style="list-style-type: none"> Abraham Silberschatz ,Henry F. Korth ,S. Sudarshan, "Database System Concepts", McGraw Hill Education, 6th Edition (2013) - (for Modules 1,2,3). Ramez Elmasri, Shamkant B.Navathe, "Database Systems ", Pearson Education, 6th Edition (2013) (for Modules 4,5,6). Thomas M Connolly and Carolyn E Begg, "Database systems", Pearson Education, 4th Edition (2009) - (for Module 4). Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems", McGraw Hill, 3rd Edition (2014). Ashutosh Kumar Dubay, "Database Management Concepts", S.K. Kataria & Sons, 1st Edition (2012). 			
Suggested MOOC			
<ol style="list-style-type: none"> Data Manipulation at Scale: Systems and Algorithms (https://www.coursera.org/learn/data-manipulation) Introduction to Databases (Coursera) (https://class.stanford.edu/courses/DB/2014/SelfPlaced/about) Database Management Essentials (Coursera) (https://www.coursera.org/learn/database-management) SQL(Stanford University) (https://lagunita.stanford.edu/courses/DB/SQL/SelfPaced/courseware) 			

Course plan			
Module	Contents	Hours Allotted	% of marks in End-Semester Examination
I	Introduction: Purpose of database systems - View of data - Data models, schemas and instances - Database Languages - Database Users and Administrators. Data modeling using Entity Relationship Model - Entity sets, Relationship sets, attributes, Constraints – Keys – Entity - Relationship Diagrams - Weak Entity Sets. Extended E-R features - Specialization and Generalization - Constraints on Specialization and Generalization.	8	15%
II	The Relational model: Relational model concepts - Relational model constraints - Relational Databases and Relational Database Schemas. Relational Query Languages :The Relational Algebra - Examples of Queries in Relational Algebra.	8	15%
FIRST INTERNAL EXAM			
III	Introduction to SQL: SQL Data Definition, Basic structure of SQL Queries, Additional Basic Operations, Set Operations, Null values, Aggregate functions, Nested Subqueries, Modifications of database Intermediate SQL: JOIN Expressions, Views, Transactions, Integrity Constraints, SQL Data types and schemas, Authorisation. Advanced SQL: Declaring and Invoking SQL Functions and Procedures, Triggers - Need for triggers, Triggers in SQL	10	20%
IV	Database Design: Functional Dependencies - Normal Forms: First Normal Form, Second Normal Form, Third Normal Form, Boyce Codd Normal Form, Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form. Inference Rules for Functional Dependencies, Minimal Sets of Functional Dependencies, Properties of Relational Decompositions.	8	20%
V	Foundations of Database Transaction Processing: Transactions, Database Items, Read and Write Operations and DBMS buffers, Transaction states, Desirable states of Transactions, Transactions and Schedules - Characterising Schedules based on Recoverability, Schedules of Transactions, Characterising Schedules Based on Recoverability, Characterising Schedules Based on Serializability, Serial, Non serial , and Conflict-Serializable Schedules, Testing for Conflict Serializability of a Schedule, View Equivalence and View Serializability. Concurrency Control in databases: Two - Phase Locking Techniques, Guaranteeing Serializability by Two-Phase Locking, Dealing with Deadlock and Starvation, Concurrency Control Based on Timestamp Ordering	8	20%
SECOND INTERNAL EXAM			

VI	Overview of Data Mining and Data Warehousing Concepts - Data mining Technology, Association rules, Classifications, Clustering, Introduction of Data Warehousing - Characteristics of Data Warehouses, Data Modeling for Data Warehouses.	6	10%
END SEMESTER EXAM			



Course No.	Course Name	L-T-P-Credits	Year of Introduction
RLMCA207	Design and Analysis of Algorithms	3-1-0-4	2016
<p style="text-align: center;">Course Objectives</p> <ul style="list-style-type: none"> • To familiarize with algorithm design strategies. • To learn to analyse and measure the performance of algorithms 			
<p style="text-align: center;">Syllabus</p> <p>Introduction to Algorithm Analysis, Divide and Conquer Method, Greedy Strategy, Dynamic Programming, Algorithm Design by State Space Trees – Backtracking - Branch and Bound, Introduction to Computational Complexity.</p>			
<p style="text-align: center;">Expected Outcome</p> <ul style="list-style-type: none"> • Given a problem, the student will be able to design algorithms. • Given an algorithm, he/she will be able to analyse it and produce an estimate of its time and space requirements. 			
<p style="text-align: center;">References</p> <ol style="list-style-type: none"> 1. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, “Fundamentals of Computer Algorithms”, Orient Longman, Universities Press, 2nd Edition (2008) 2. Thomas H. Cormen, et al., “Introduction to Algorithms”, Prentice Hall, 3rd Edition (2010) 3. A. Levitin, “Introduction to the Design & Analysis of Algorithms”, Pearson Education, 3rd Edition (2008). 4. Richard Neapolitan , Kumarss Naimipour, “Foundations Of Algorithms “, Jones and Bartlett Publishers, Inc, 4th Edition (2011). 5. Sara Baase , Allen Van Gelder , “Computer Algorithms: Introduction to Design and Analysis”, Pearson India, 3rd Edition (2002). 6. Harsh Bhasin, “Algorithms Design and Analysis”, Oxford University Press, 1st Edition (2015). 7. Rajesh K.Shukla, “Analysis and Design of Algorithms, A Beginner’s Approach”, Wiley (2015) 			

Course Plan			
Module	Contents	Hours Allotted	% of marks in End-Semester Examination
I	Introduction to Algorithm Analysis : Algorithm and its properties - Apriory and Aposterior analysis of algorithms - Time and Space Complexity- Elementary Operation and Complexity Estimation of Simple Algorithms - Asymptotic notations and their properties - Common Complexity functions - Recurrence Relations - Solution of Recurrence Relations - Iteration Method - Recurrence Tree Method - Master's Theorem (Proof not required)	8	15
II	Divide and Conquer Method : Control Abstraction for Divide and Conquer- 2-way Merge Sort , Quick sort, Binary Search, Finding Maximum and minimum, Divide and Conquer Matrix Multiplication.	7	15
FIRST INTERNAL EXAM			
III	Greedy Strategy: - Control Abstraction for Greedy Strategy - The Fractional Knapsack Problem - Prim's' and Kruskal's Algorithms for Minimal Spanning Tree - Job Sequencing Problem.	6	15
IV	Dynamic Programming : Control Abstraction for Dynamic Programming - The Principle of Optimal Substructure - All Pair Shortest Path Problem - Travelling Sales Person Problem, Divide and Conquer vs Dynamic Programming.	6	15
V	Algorithm Design by State Space Trees: State Space - Bounding Functions – Examples. Backtracking: Control Abstraction for Backtracking - The N-Queen's Problem, Sum of Subset Problem. Branch and Bound: Depth First, Breadth First and Best First Branch and Bound strategies and their control abstractions - The N^2-1 Puzzle Problem	10	25
SECOND INTERNAL EXAM			
VI	Introduction to Computational Complexity: Tractable and Intractable Problems - Complexity Classes- P and NP Classes - SAT and 3-SAT Problems - NP-Hard and NP-Complete Classes – Study of NP complete problems - Travelling Sales Person Problem - Knapsack Problem - Clique Problem, Vertex Cover Problem. <i>Note: Only general concepts required to be covered. No proof required. Only elementary treatment is required.</i>	8	15
END SEMESTER EXAM			

Course No.	Course Name	L-T-P-Credits	Year of introduction
RLMCA209	Web Programming	3-1-0-4	2016
Course Objectives			
<ul style="list-style-type: none"> • To understand the concepts of the World Wide Web • To understand and practice markup languages • To understand and practice embedded dynamic scripting on client side Internet Programming • To understand and practice web development techniques on client-side • To understand and practice server-side scripting 			
Syllabus			
<p>Introduction To Web - Internetworking - Working with TCP/IP - Client/Server concepts - World Wide Web - Components of Web Application - Types of Web Content - Application Servers - Web Security. UI DESIGN - Markup Language: Introduction to HTML5 - Cascading Style Sheet: Introduction to CSS3.</p> <p>Client - Scripting using JAVASCRIPT - Introduction to Javascript - Document Object Model - Event Handling - Controlling Windows & Frames and Documents - Browser Management and Media Management - Object-Oriented Techniques in JavaScript - JQuery.</p> <p>Server – Scripting using PHP - Introduction to PHP - Programming basics - Reading Data in Web Pages - Embedding PHP within HTML - Establishing connectivity with MySQL database.</p>			
Expected Outcome			
<ul style="list-style-type: none"> • Acquire knowledge about functionalities of world wide web • Explore markup languages features and create interactive web pages using them • Learn and design Client side validation using scripting languages • Acquire knowledge about Open source JavaScript libraries • Able to design front end web page and connect to the back end databases • Ability to do Client-side & Server-side scripting 			
References			
<ol style="list-style-type: none"> 1. Douglas E Comer, “The Internet Book: Everything You Need to Know About Computer Networking and How the Internet Works”, 4th Edition, Prentice Hall 2. Harvey Deitel and Abbey Deitel, “Internet and World Wide Web - How To Program”, 5th Edition, Pearson Education 3. Thomas A Powell, Fritz Schneider, “JavaScript: The Complete Reference”, 3rd Edition, Tata McGraw Hill 4. David Flanagan, “JavaScript: The Definitive Guide”, 6th Edition”, O'Reilly Media 5. Steven Holzner, “PHP-The Complete Reference”, Tata McGraw Hill, 1st Edition (2007) 6. Steve Suehring, Tim Converse, and Joyce Park, “PHP6 and MySQL Bible”, Wiley India Pvt Ltd (2009) 			
Web resource			
<ol style="list-style-type: none"> 1. http://php.net/manual/ 			

Course Plan			
Module	Contents	Hours Allotted	% of marks in End-Semester Examination
I	Introduction to web - Internet Standards – Introduction to WWW – WWW Architecture – SMTP – POP3 – File Transfer Protocol - Overview of HTTP, HTTP request – response — Generation of dynamic web pages.	7	15
II	Markup Language (HTML): Introduction to HTML and HTML5 - Formatting and Fonts –Commenting Code – Anchors – Backgrounds – Images – Hyperlinks – Lists – Tables – Frames - HTML Forms.	6	15
FIRST INTERNAL EXAM			
III	Cascading Style Sheet (CSS): The need for CSS, Introduction to CSS – Basic syntax and structure - Inline Styles – Embedding Style Sheets - Linking External Style Sheets – Backgrounds – Manipulating text - Margins and Padding - Positioning using CSS.	6	15
IV	Client Side Scripting using JavaScript: Introduction - Core features - Data types and Variables - Operators, Expressions, and Statements - Functions - Objects - Array, Date and Math related Objects - Document Object Model - Event Handling - Controlling Windows & Frames and Documents - Form handling and validations.	8	15
V	Advanced JavaScript: Browser Management and Media Management – Classes – Constructors – Object-Oriented Techniques in JavaScript – Object constructor and Prototyping - Sub classes and Super classes – JSON - JQuery and AJAX.	8	20
SECOND INTERNAL EXAM			
VI	Server Side Scripting using PHP: Introduction - How web works - Setting up the environment (Example - XAMP server) – PHP Programming basics - Print/echo - Variables and constants – Strings and Arrays – Operators, Control structures and looping structures – Functions – Reading Data in Web Pages - Embedding PHP within HTML – Establishing connectivity with database.	10	20
END SEMESTER EXAM			

Course No.	Course Name	L-T-P-Credits	Year of Introduction
RLMCA231	Database Lab	0-0-4-1	2016
Course Objectives			
<ul style="list-style-type: none"> To get familiar with the functionality and support provided by commercially popular RDBMS and understand how to use it to meet your data storage and organization requirements. 			
Syllabus			
This is a companion Course for the 'RMCA303 Database Management Systems' theory course.			
Expected Outcome			
Upon successfully completing this course, the student will be able to:			
<ul style="list-style-type: none"> Understand, appreciate and effectively explain the underlying concepts of database technologies. Design and implement a database schema for a given problem-domain. Normalize a database. Populate and query a database using SQL DML/DDI commands. Use any popular RDBMS for data access and updating. 			
References			
<ol style="list-style-type: none"> Text Books prescribed for theory course 'RMCA303 Database Management Systems' ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rd Edition 			
Web Resources			
<ol style="list-style-type: none"> mySQL (http://dev.mysql.com/doc/refman/5.7/en/tutorial.html) MongoDB (https://university.mongodb.com/courses/M101P/about) Hadoop HBase-(https://hbase.apache.org/book.html#shell, followed by https://hbase.apache.org/book.html#shell_exercises) Apache Hive (https://cwiki.apache.org/confluence/display/Hive/Tutorial) Pig (https://pig.apache.org/docs/r0.7.0/tutorial.html) 			
Suggested MOOC			
<ol style="list-style-type: none"> SQL(Stanford University) (https://lagunita.stanford.edu/courses/DB/SQL/SelfPaced/courseware) Databases (Stanford OpenEdX) (https://online.stanford.edu/course/databases-self-paced) 			

Course Plan		
Experiment	Description	Hours Allotted
I	<p>The Students can do their practical in the following areas in any of the DBMS like MySql, Oracle, MongoDB etc..</p> <ol style="list-style-type: none"> 1. Table Design- Using foreign key and Normalization 2. Practice SQL Data Definition Language(DDL) commands <ol style="list-style-type: none"> a. Table creation and alteration (include integrity constraints such as primary key, referential integrity constraints, check, unique and null constraints both column and table level) 3. Practice SQL Data Manipulation Language (DML) commands <ol style="list-style-type: none"> a. Row insertion, deletion and updating b. Retrieval of data <ol style="list-style-type: none"> I. Simple select query II. Sub query (returning single row, multiple rows, more than one column) III. Joining tables 4. Practice Transaction Control Language (TCL) commands (Grant, revoke, commit, rollback and save point options) 5. Development of sample applications using Oracle/ MySql / MongoDB as back end. Sample applications may include <ol style="list-style-type: none"> I. Payroll Information II. Student Information System III. Bank Transaction IV. Library Information System etc. 6. Develop programs using Triggers, Stored procedures 	50

*End Semester Exam will be conducted internally by the College.

Course No.	Course Name	L-T-P-Credits	Year of Introduction
RLMCA233	Web Programming Lab	0-0-4-1	2016
Course Objectives			
<ul style="list-style-type: none"> • This course is to practice the concepts & syntax learned in the course RL1MCA305. • To understand and practice markup languages. • To understand and practice embedded dynamic scripting on client side Internet Programming. • To understand and practice web development techniques on client-side. • To understand and practice server-side scripting. 			
Syllabus			
This is a companion Course for the 'RMCA305 Web Programming'.			
Expected Outcome			
Upon successfully completing this course, the student will be able to:			
<ul style="list-style-type: none"> • Explore markup languages features and create interactive web pages using them. • Learn and design Client side validation using scripting languages. • Acquire knowledge about Open source JavaScript libraries. • Able to design front end web page and connect to the back end databases. • Able to do Client-side & Server-side scripting • To develop Web Applications 			
References			
1. Text Books prescribed for theory course 'RMCA305 Web Programming'			
Web resources			
1. http://php.net/manual/			

Course Plan		
Experiment	Description	Hours Allotted
I	<ol style="list-style-type: none"> 1. Create a web page with the following using HTML5 <ol style="list-style-type: none"> (i) To embed an image map in a web page (ii) To fix the hot spots (iii) Show all the related information when the hot spots are clicked. 2. Create a web page with all types of Cascading style sheets. 3. Implement Client Side Scripts for Validating Web Form Controls using JavaScript. 4. Designing Quiz Application Personal Information System using JavaScript 5. Develop PHP program using Arrays, control structures, looping structures and Form Handling 6. Implement Web applications using HTML and JSP/PHP/ASP and deploy. 7. Using PHP and MySQL, develop a program to accept book information viz. Accession number, title, authors, edition and publisher from a web page and store the information in a database and to search for a book with the title specified by the user and to display the search results with proper headings. 7. Develop a web application for Airline Reservation System using PHP 8. Programs for creating dynamic and interactive web pages using forms. 9. Test the application on an Application Server. <p>Note : Students can be given a group micro project, so that they learn to work in a team environment. They can also be trained on project management tools.</p>	50

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