

<b>School: Computer Sciences &amp; Applications</b>	<b>Programme: MCA</b>			
<b>Course Code: PCA401</b>	<b>Year : Second Year</b>		<b>Semester - IV</b>	
<b>Course: Distributed Operating System</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>
<b>Theory: 3 Hrs/Week</b>	<b>Max. University Theory Examination: 50 Marks</b>			
<b>Max. Time for Theory Exam.: 3 Hrs</b>	<b>Continuous Internal Assessment: 50 Marks</b>			

<b>Objectives</b>	
<b>1</b>	To understand the fundamentals of a Distributed system.
<b>2</b>	To comprehend with the concept of remote procedure call and its implementation
<b>3</b>	To understand the working of shared memory used by a distributed system.
<b>4</b>	To be able to demonstrate the principle of synchronization

<b>Course Outcomes</b>	
On successful completion of the course students will be able to:	
<b>1</b>	Explain the principles and issues in Inter Process Communication in a DOS.
<b>2</b>	Use the concepts of Remote Procedure call in Distributed applications
<b>3</b>	Implement shared memory resources using distributed algorithms
<b>4</b>	Practice the distributed object technologies and use them in developing applications

<b>Unit Number</b>	<b>Details</b>	<b>Hours</b>
<b>1</b>	<b>Fundamentals:</b> Distributed computing, system model, distributed operating system, designing operating system, Introduction to DCE <b>Message Passing :</b> Desirable features message passing system, Issues in message passing, synchronization, buffering, multi-datagram messages , Encoding and decoding of message data, Process addressing, Failure handling, Group communication	<b>10</b>
<b>2</b>	<b>Remote procedure call:</b> RPC model, Transparency of RPC, implementing RPC mechanism, Stub generation, Marshaling arguments and Results, Server Management, Parameter-passing Semantics, call Semantics, Communication protocols for RPCs, Complicated RPC Client server binding, Exception Handling , Security, special types of RPCs, RPCs in Heterogeneous Environments, Lightweight RPC, Optimizations for better performance.	<b>10</b>
	<b>Distributed Shared Memory:</b> General architecture of DSM	<b>9</b>

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3	systems, Design and implementation of DSM, Granularity, structure of shared memory space, consistency models, Replacement Strategy, Thrashing, other approaches to DSM, Heterogeneous DSM, and Advantages of DSM. <b>Synchronization:</b> Clock synchronization, event ordering, mutual exclusion, Deadlock, Election Algorithm.	
4	<b>Resource and Process Management:</b> Desirable Features of global Scheduling algorithm, Task assignment approach, Load balancing approach, load sharing approach, Introduction to process management, process migration, Threads	8
5	<b>Distributed File Systems:</b> Introduction, good features of DFS, File models, File Accessing models, File sharing Semantics, File-Caching Schemes, File Replication, Fault Tolerance, Atomic Transactions and design principles.	8
<b>Total</b>		<b>45</b>

Resources	
<b>Recommended Books</b>	<ol style="list-style-type: none"> <li>1. Pradeep K Sinha "Distributed Operating Systems: Concepts and design" IEEE computer society press.</li> <li>2. A. Tanuenbaum "Distributed Operating System" Pearson Edition</li> <li>3. PUDER, ROMER "Distributed Systems Architecture : Middleware approach" ELSEVIER publication</li> </ol>
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. G. Coulouris, J. Dollimore and T. Kindberg "Distributed Systems : Concepts and design" Pearson Edition.</li> <li>2. Singhal, N. Shivaratri Advanced Concepts in Operating Systems" TMH</li> </ol>

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<b>School: Computer Sciences &amp; Applications</b>	<b>Programme: MCA</b>			
<b>Course Code: PCA402</b>	<b>Year : Second Year</b>		<b>Semester - IV</b>	
<b>Course: Web Technology</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>
<b>Theory: 3 Hrs/Week</b>	<b>Max. University Theory Examination: 50 Marks</b>			
<b>Max. Time for Theory Exam.: 3 Hrs</b>	<b>Continuous Internal Assessment: 50 Marks</b>			

<b>Objectives</b>	
<b>1</b>	To analyze a web page and identify its elements and attributes
<b>2</b>	To understand concepts of developing advanced HTML pages with the help of frames, scripting languages, and evolving technologies like DHTML, and XML
<b>3</b>	To understand web page site planning, management and maintenance
<b>4</b>	To create XML documents and Schema
<b>5</b>	To give the distinguish characteristic of scripting languages

<b>Course Outcomes</b>	
On successful completion of the course students will be able to:	
<b>1</b>	Develop client side and server side applications.
<b>2</b>	Design and develop enterprise applications
<b>3</b>	List the various middleware technologies and use them to develop applications

<b>Unit Number</b>	<b>Details</b>	<b>Hours</b>
<b>1</b>	<b>Fundamentals</b> :Internet, WWW, A Brief Introduction to the Internet ,Web Browsers and Web Servers, Uniform Resource Locators(URL), Multipurpose Internet Mail Extensions, HTTP ,Security, The Web Programmer’s Toolbox <b>HTML:</b> Introduction To HTML, WWW, W3C, web publishing, Common HTML, Basic Syntax, Basic Text Markup ,Images, Hypertext Links, Lists ,Tables Frames, Form Introduction with text box, text area, buttons, List box, radio, checkbox etc	<b>10</b>
<b>2</b>	<b>CSS</b> Introduction To Style sheet, types of style sheets- Inline, External, Embedded CSS, text formatting properties, CSS Border, margin properties, Positioning Use of classes in CSS, color ``properties, use of <div>&<span>	<b>8</b>
<b>3</b>	<b>Scripting Languages:</b> Java Script (JS) in Web Page, Overview of JavaScript ,Advantage of Java Script ,types, intro of JavaScript, JavaScript identifiers, control statement, Looping structure, Array: Introduction, Array with methods, Math, String, Date Objects with methods User defined & Predefined	<b>9</b>

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	functions, The Document Object Model , DOM objects, Window Navigator, History, Location, Event handling, Validations On Forms	
4	<b>VBScript</b> :Introduction To VBScript, Data types, Variables, Control of Flow Control Structures & Loops, Functions in VBScript, Client side web scripting, Validating forms, DOM, Handling errors	8
5	<b>XML</b> : Introduction of XML, features, XML writing elements, attributes etc. Document structure , Document, type definitions, XML with CSS, DSO, XML Namespaces XML DTD, XML Schema, Writing Simple sheets using XSLT, SAX & DOM Parsers, SOAP Intro. <b>Active Server Page (ASP)</b> : Introduction Working with ASP page, ASP object ,Server object File system object, Role of Global .asa file, Error Handling in ASP ,Database Handling: Connection, Recordset , Command Object	10
<b>Total</b>		<b>45</b>

Resources	
<b>Recommended Books</b>	<ol style="list-style-type: none"> <li>1. Robert W. Sebesta: Programming the World Wide Web, 4th Edition, Pearson education, 2012.</li> <li>2. HTML, DHTML, JavaScript, Perl &amp; CGI Ivan Bayross</li> <li>3. Web enabled commercial application development using HTML, DHTML, JavaScript, PERL-CG</li> <li>4. VBScript in Nutshell</li> <li>5. Internet Technology at work Hofstetterfred</li> <li>6. Beginning XML Wrox Press Programming ASP Ivan Bayross</li> </ol>
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Beginning ASP 3.0 Wrox press</li> </ol>

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<b>School: Computer Sciences &amp; Applications</b>	<b>Programme: MCA</b>			
<b>Course Code: PCA403I</b>	<b>Year : Second Year</b>		<b>Semester - IV</b>	
<b>Course: Internet of Things</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>
<b>Theory: 3 Hrs/Week</b>	<b>Max. University Theory Examination: 50 Marks</b>			
<b>Max. Time for Theory Exam.: 3 Hrs</b>	<b>Continuous Internal Assessment: 50 Marks</b>			

<b>Objectives</b>	
<b>1</b>	To understand the Internet of Things
<b>2</b>	Understand wireless sensor network architecture and its framework along with WSN applications
<b>3</b>	Provide an overview of concepts, main trends and challenges of Internet of Things
<b>4</b>	To make students aware of resource management and security issues in Internet of Things.

<b>Course Outcomes</b>	
On successful completion of the course students will be able to:	
<b>1</b>	Apply the knowledge of MANET for drawing information and translating it to actuation.
<b>2</b>	Use WSN for topology management in cost effective optimization of power
<b>3</b>	Apply information centric sensing for configuring the network topology.
<b>4</b>	Analyze the failure of TCP in WSN and study/learn specific protocol for WSN.

<b>Unit Number</b>	<b>Details</b>	<b>Hours</b>
<b>1</b>	<b>Introduction to Internet of Things:</b> What is the Internet of Things? : History of IoT, About IoT, Overview and Motivations, Examples of Applications, Internet of Things Definitions and Frameworks : IoT Definitions	<b>8</b>
<b>2</b>	<b>Fundamental of IOT:</b> Introduction, Characteristics, Traffic Characteristics, Environment Characteristics Physical design , Protocols ,Logical design ,Enabling technologies , IoT Levels , Domain Specific IoTs IoT vs M2M, Identification of IoT Objects and Services, Structural Aspects of the IoT, , Scalability, Interoperability, Security and Privacy, Open Architecture, Key IoT Technologies, Device Intelligence, Communication Capabilities	<b>10</b>

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3	<p><b>IoT Technology</b> : RFID, Introduction, Principle of RFID, Components of an RFID system, Issues EPC Global Architecture Framework: EPCIS &amp; ONS, Design issues, Technological challenges, Security challenges, IP for IoT, Web of Things,</p> <p><b>Wireless Sensor Networks:</b> History and context, WSN Architecture, the node, Connecting nodes, Networking Nodes, Securing Communication for IoT, WSN specific IoT applications, challenges: Security, QoS, Configuration</p> <p><b>Clustering,</b> Software Agents, Clustering Principles in an Internet of Things Architecture, Design Guidelines, and Software Agents for Object Representation</p>	10
4	<p><b>M2M to IoT</b> – A Basic Perspective, Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies.</p> <p><b>M2M to IoT</b>-An Architectural Overview, Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations</p>	9
5	<p><b>IoT Applications</b> for Value Creations Introduction, IoT applications for industry: Future Factory Concepts, Brownfield IoT, Smart Objects, Smart Applications, Four Aspects in your Business to Master IoT, Value Creation from Big Data and Serialization</p> <p>Internet of Things Privacy, Security and Governance Introduction, Overview of Governance, Privacy and Security Issues, Contribution from FP7 Projects, Security, Privacy and Trust in IoT</p>	8
<b>Total</b>		<b>45</b>

## Resources

<b>Recommended Books</b>	<ol style="list-style-type: none"> <li>1. Daniel Minoli, “Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications”</li> <li>2. Bernd Scholz-Reiter, Florian Michahelles, “Architecting the Internet of Things”</li> <li>3. Parikshit N. Mahalle&amp; Poonam N. Railkar, “Identity Management for Internet of Things”, River Publishers</li> <li>4. The Internet of Things (MIT Press) by Samuel Greengard</li> <li>5. The Internet of Things (Connecting objects to the web) by Hakima Chaouchi ,Wiley .</li> <li>6. Vijay Madisetti and Arshdeep Bahga, “Internet of Things (A Hands-on-Approach)”, 1 st Edition, VPT,</li> </ol>
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Hakima Chaouchi, “ The Internet of Things Connecting Objects to the Web” ISBN ,Willy Publications</li> </ol>

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<b>School: Computer Sciences &amp; Applications</b>	<b>Programme: MCA</b>			
<b>Course Code: PCA403II</b>	<b>Year : Second Year</b>		<b>Semester - IV</b>	
<b>Course: Green Computing</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>
<b>Theory: 3 Hrs/Week</b>	<b>Max. University Theory Examination: 50 Marks</b>			
<b>Max. Time for Theory Exam.: 3 Hrs</b>	<b>Continuous Internal Assessment: 50 Marks</b>			

<b>Objectives</b>	
<b>1</b>	To introduce green computing in the ICT environments
<b>2</b>	To make students aware about the regulations regarding ICT emissions
<b>3</b>	To make students understand about the need of virtualization.

<b>Course Outcomes</b>	
On successful completion of the course students will be able to:	
<b>1</b>	Deduce the need and basics of Green IT
<b>2</b>	Compare the collaborative effort of various agencies for the effectiveness of the Green IT.
<b>3</b>	State the need for virtualization and its impact
<b>4</b>	List and categorize various IT energy-use metrics
<b>5</b>	Use Green IT in various areas and the future needs and trends

<b>Unit Number</b>	<b>Details</b>	<b>Hours</b>
<b>1</b>	Importance of Green IT: The Growing Significance of Green IT and Green Data Centers -All Basic Steps towards Green IT - The Basics of Green IT	<b>8</b>
<b>2</b>	Collaboration is Key for Green IT - The Government's Role - Regulation and EPA Activity - : Regulating Greenhouse Gases - Role of the EPA -IT Company Support of Government Regulation - Educational Institutions and Government Regulation	<b>9</b>
<b>3</b>	Magic of Incentive - The Role of Electric Utilities - A Most-Significant Step - "Virtualizing" ITSystems: Consolidation and Virtualization - Data Storage	<b>8</b>
<b>4</b>	Need for Standard IT Energy-Use Metrics: SPEC -EPA- LEED- Green Grid Data Center Power Efficiency Metrics: PUE and DciE. Data Center - Strategies for Increasing Data Center - 38 Cooling Efficiency - Fuel Cells for Data Center Electricity - Emerging Technologies for Data Centers.	<b>10</b>
<b>5</b>	Web, Temporal And Spatial Data Mining Green IT Case Studies for Energy Utilities - Green IT Case Studies for Universities and a	<b>10</b>

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	Large Company - Worldwide Green IT - Case Studies - The Future of Green IT for Corporations.	
<b>Total</b>		<b>45</b>

<b>Resources</b>	
<b>Recommended Books</b>	1. John Lamb, "The Greening of IT-How Companies Can Make a Difference for the Environment", IBM Press 2009
<b>Reference Books</b>	1. Frederic P. Miller, Agnes F. Vandome, John McBrewster, "Green Computing", Alpha script publishing,

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<b>School: Computer Sciences &amp; Applications</b>	<b>Programme: MCA</b>			
<b>Course Code: PCA404I</b>	<b>Year : Second Year</b>		<b>Semester - IV</b>	
<b>Course: Big Data Analytics</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>
<b>Theory: 3 Hrs/Week</b>	<b>Max. University Theory Examination: 50 Marks</b>			
<b>Max. Time for Theory Exam.: 3 Hrs</b>	<b>Continuous Internal Assessment: 50 Marks</b>			

Objectives	
<b>1</b>	To study the concept of Big Data in its basic.
<b>2</b>	To understand the structure of Hadoop and its clustering structure
<b>3</b>	To understand the challenges involved in the techniques of Big data

Course Outcomes	
On successful completion of the course students will be able to:	
<b>1</b>	Explain the Distributed File System; Hadoop Architecture and Map Reduce Framework.
<b>2</b>	Evaluate how Data mining techniques differ while handling Big Data
<b>3</b>	Differentiate between the Data at Rest and Data in motion (streaming data) and issues related to each.
<b>4</b>	Describe characteristics of databases and programming languages
<b>5</b>	Discuss the advantages and disadvantages of different Indexing techniques specific to BIG Data and Text Analytics

Unit Number	Details	Hours
<b>1</b>	<b>Big Data Overview:</b> What is big data? The challenges and Opportunities. New Infrastructures, Analysis of data at Rest-Hadoop analytics, Limitations of existing distributing systems, Hadoop Approach, Hadoop Architecture. <b>Distributed file system:</b> HDFS and GPFS, Map-Reduce programming paradigm in general, Internals of Hadoop MR engine	<b>10</b>
<b>2</b>	<b>Need for High level language- JAQL and PIG:</b> Basic syntax, simple programs, Introduction to Text Analytics: Document Shingling, Locality Sensitive hashing, Similarity, Measures, Using Regular expressions, Using AQL, Sentiment analysis	<b>9</b>
<b>3</b>	<b>No SQL:</b> JSON store, Mongo-DB, RDF, HBASE, <b>Next Gen Hadoop:</b> Yarn, Spark Analytics. R and BigR, Clustering, Classification, Segmentation, Linear regression, ML	<b>8</b>
<b>4</b>	<b>Search:</b> What is Indexing and Indexing Techniques, Create inverted index using JAQL. <b>Bundling Hadoop job:</b> What is Application? Use BI tooling to create application. Publish	<b>8</b>

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	applications	
5	<b>Analysis of data in motion - Real time analytics</b> Introduction to streams computing: Challenges/limitations of conventional Systems, Solving a real time analytics problem using conventional system. Challenges to be solved - scalability, thread pooling, Understanding the challenges in handling streaming data from the real world and how to address those using stream computing, Benefits of stream computing in Big Data world, Real-time Analytics ,Platform (RTAP) and putting RTAP to use	10
<b>Total</b>		<b>45</b>

<b>Resources</b>	
<b>Recommended Books</b>	<ol style="list-style-type: none"> <li>1. Zikopoulos, Paul, and Chris Eaton. Understanding big data: Analytics for enterprise class hadoop and streaming data. McGraw-Hill Osborne Media, 2011.</li> <li>2. Tom White, Hadoop – The Definitive Guide O’Reilly Media, 3<sup>rd</sup> ed,</li> <li>3. Andrade, Henrique CM, Buğra Gedik, and Deepak S. Turaga. Fundamentals of Stream Processing: Application Design, Systems, and Analytics. Cambridge University Press, 2014.</li> <li>4. Leskovec, Jure, Anand Rajaraman, and Jeffrey David Ullman. Mining of massive datasets. Cambridge University Press, 2014.</li> </ol>
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Lam, Chuck. Hadoop in action. Manning Publications Co., 2010.</li> <li>2. Zhao, Yanchang. R and data mining: Examples and case studies. Academic Press, 2012.</li> </ol>

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<b>Course Code: PCA404II</b>	<b>Year : Second Year</b>		<b>Semester - IV</b>	
<b>Course: Pervasive Computing</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>
<b>Theory: 3 Hrs/Week</b>	<b>Max. University Theory Examination: 50 Marks</b>			
<b>Max. Time for Theory Exam.: 3 Hrs</b>	<b>Continuous Internal Assessment: 50 Marks</b>			

<b>Objectives</b>	
<b>1</b>	To introduce pervasive computing abilities
<b>2</b>	To introduce tools and techniques used while solving problems using pervasive computing.
<b>3</b>	To study algorithmic examples in distributed, concurrent and parallel environments

<b>Course Outcomes</b>	
On successful completion of the course students will be able to:	
<b>1</b>	To discover the characteristics of pervasive computing applications including the major system components and architectures of the systems
<b>2</b>	To analyze the strengths and limitations of the tools and devices for development of pervasive computing systems
<b>3</b>	To explore the characteristics of different types of mobile networks on the performance of a pervasive computing system
<b>4</b>	To analyze and compare the performance of different data dissemination techniques and algorithms for mobile real-time applications
<b>5</b>	To develop an attitude to propose solutions with comparisons for problems related to pervasive computing system through investigation

<b>Unit Number</b>	<b>Details</b>	<b>Hours</b>
<b>1</b>	<b>Introduction to Pervasive Computing:</b> Concept of Distributed Computing, Mobile Computing, Pervasive Computing, Wearable Computing, Modeling the Key Ubiquitous/Pervasive Computing Properties, Architectural design for UbiCom systems, Mobile Adaptive Computing, Mobility Management and Caching, Location Management Case Studies	<b>9</b>
<b>2</b>	<b>Pervasive Computing Devices:</b> Smart Environment : CPI and CCI (Smart Devices : Application and Requirements , Device Technology and Connectivity, Human Computer Interaction, Everyday applications in the virtual, human and physical world; Smart devices and services: Service Architecture Models, Service Provision Life Cycle, Virtual Machines and Operating Systems.	<b>10</b>

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3	<b>Human Computer Interaction:</b> explicit HCI, Implicit HCI, User Interface and Interaction for four hand-held widely used devices, Hidden UI via basic smart devices, Hidden UI via wearable and Implanted devices, Human centered design (HCD), user models, iHCI design.	8
4	<b>Middleware for Pervasive:</b> What is Mobile Middleware, Adaptive middleware, Context aware middleware, Service Discovery: Services, garbage collection, eventing, security, Interoperability; Mobile Agents: Agent architecture, Migration strategies, Communication Strategies <b>Security in Pervasive Computing:</b> Security and Privacy in Pervasive Networks, Experimental Comparison of Collaborative Defense Strategies for Network Security.	10
5	<b>Challenges and Outlook:</b> Overview of challenges, smart devices, Smart Interaction, Smart physical environment device interaction, Smart human-device interaction, Human Intelligence versus machine intelligence, social issues. Case Study- Wearable Computing/ Cyber Physical System.	8
<b>Total</b>		<b>45</b>

Resources	
<b>Recommended Books</b>	<ol style="list-style-type: none"> <li>1. Stefan Poslad, "Ubiquitous Computing, Smart devices, environment and interaction", Wiley.</li> <li>2. Frank Adelstein, Sandeep Gupta, Golden Richard III, Loren Schwiebert, "Fundamentals of Mobile and Pervasive Computing", Tata McGraw Hills</li> </ol>
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Jochen Burkhardt, Horst Henn, Stefan Hepper, Klaus Rindtor , Thomas Schaeck, "Pervasive Computing", Pearson, Eighteenth Impression, 2014.</li> </ol>

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<b>School: Computer Sciences &amp; Applications</b>	<b>Programme: MCA</b>			
<b>Course Code: PCA405</b>	<b>Year : Second Year</b>		<b>Semester - IV</b>	
<b>Course: Value Education</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>2</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>Theory: 2 Hrs/Week</b>				

<b>Objectives</b>	
<b>1</b>	Understand value of education and self- development
<b>2</b>	Imbibe good values in students
<b>3</b>	Let they should know about the importance of character

<b>Course Outcomes</b>	
On successful completion of the course students will be able to:	
<b>1</b>	Learn and Understands Social Values and Ethics
<b>2</b>	Understands the Personality and Behavior Development
<b>3</b>	Analyze self control to help studying effectively

<b>Unit Number</b>	<b>Details</b>	<b>Hours</b>
<b>1</b>	Values and self-development –Social values and individual attitudes. Work ethics, Indian vision of humanism. Moral and non-moral valuation. Standards and principles. Value judgments.	<b>5</b>
<b>2</b>	Importance of cultivation of values. Sense of duty. Devotion, Self-reliance. Confidence, Concentration, Truthfulness, Cleanliness, Honesty, Humanity. Power of faith, National Unity, Patriotism. Love for nature, Discipline	<b>5</b>
<b>3</b>	Personality and Behavior Development - Soul and Scientific attitude. Positive Thinking. Integrity and discipline. Punctuality, Love and Kindness. Avoid fault Thinking. Free from anger, Dignity of labor.	<b>5</b>
<b>4</b>	Universal brotherhood and religious tolerance. True friendship, Happiness Vs suffering, love for truth, Aware of self-destructive habits. Association and Cooperation, Doing best for saving nature	<b>4</b>
<b>5</b>	Character and Competence –Holy books vs Blind faith. Self-management and Good health, Science of reincarnation, Equality, Nonviolence, Humility, Role of Women, All religions and same message. Mind your Mind, Self-control. Honesty, Studying effectively	<b>5</b>
<b>Total</b>		<b>24</b>

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<b>Resources</b>	
<b>Recommended Books</b>	1. Chakroborty, S.K. "Values and Ethics for organizations Theory and practice", Oxford University Press, New Delhi

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<b>School: Computer Sciences &amp; Applications</b>	<b>Programme: MCA</b>			
<b>Course Code: PCA411</b>	<b>Year : Second Year</b>		<b>Semester - IV</b>	
<b>Course: Lab Course based on Distributed Operating System</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	--	--	<b>4</b>	<b>2</b>
<b>Practical: UG - 4 Hrs/Batch (20 Students)</b>	<b>Practical Examination: 50 Marks</b>			
	<b>Formative CIA/Term Work: 50 Marks</b>			

<b>Sr. No.</b>	<b>Description</b>
<b>Group A: (Any SIX Assignments)</b>	
<b>1</b>	WAP for Implementation of Election Algorithm
<b>2</b>	Simulate a program for resolving of Deadlock
<b>3</b>	WAP for Client-server implementation using RPC/RMI
<b>4</b>	WAP for Client server implementation using CORBA architecture
<b>5</b>	WAP for Implementation of Clock synchronization
<b>6</b>	WAP for implementation data centric & client centric consistency model.
<b>7</b>	WAP for Implementation of name resolution.
<b>8</b>	WAP for implementation of stateful server and stateless server

<b>Term Work:</b>
Term Work assessment shall be conducted for the Project, Tutorials and Seminar. Term work is continuous assessment based on work done, submission of work in the form of report/journal, timely completion, attendance, and understanding. It should be assessed by subject teacher of the institute. At the end of the semester, the final grade for a Term Work shall be assigned based on the performance of the student and is to be submitted to the University.

<b>Notes</b>	
1	The experiments from the regular practical syllabus will be performed (30 Marks).
2	The regular attendance of students during the syllabus practical course will be monitored and marks will be given accordingly (10 Marks).
3	Good Laboratory Practices (10 Marks)

<b>Practical/Oral/Presentation:</b>
Practical shall be conducted and assessed jointly by internal and external examiners. The performance in the Practical examination shall be assessed by at least a pair of examiners appointed as examiners by the University. The examiners will prepare the mark/grade sheet in the format as specified by the University, authenticate and seal it. Sealed envelope shall be submitted to the head of the department or authorized person.

<b>Document Ref.</b>	<b>Rev. No./ Date</b>	<b>Issue No./ Date</b>	<b>Prepared by</b>	<b>Approved by</b>
SUN/SOCSA/ /_____/_____/2017-18				

<b>School: Computer Sciences &amp; Applications</b>	<b>Programme: MCA</b>			
<b>Course Code: PCA412</b>	<b>Year : Second Year</b>		<b>Semester - IV</b>	
<b>Course: Lab Course based on Web Technology</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	--	--	<b>4</b>	<b>2</b>
<b>Practical: UG - 4 Hrs/Batch (20 Students)</b>	<b>Practical Examination: 50 Marks</b>			
	<b>Formative CIA/Term Work: 50 Marks</b>			

<b>Sr. No.</b>	<b>Description</b>
	<b>Group A: (Any SIX Assignments)</b>
<b>1</b>	Create simple HTML File. Use of various HTML Tags on Web Forms.
<b>2</b>	Write a HTML to create an html file to link to different html page which contains images, tables, and also link within a page.
<b>3</b>	Write html page with different types of frames such as floating frame, navigation frame & mixed frame.
<b>4</b>	Develop static pages (using only HTML) of an online Book store. The pages should resemble: www.amazon.com The website should consist the following pages. Home page, Registration and user Login, User profile page, Books catalog, Shopping cart etc.
<b>5</b>	Write an XML file which will display the Book information which includes the following: 1) Title of the book 2) Author Name 3) ISBN number 4) Publisher name 5) Edition 6) Price Write a Document Type Definition (DTD) to validate the above XML file.
<b>6</b>	To create an html page named as "registration.html" a) set background colors b) use table for alignment c) provide font colors & size
<b>7</b>	To create an html file by applying the different styles using inline, external & internal style sheets.
<b>8</b>	To write a Javascript program to define a user defined function for sorting the values in an array.
<b>9</b>	To create an html page to explain the use of various predefined functions in a string and math object in java script.
	<b>Group B: (Any Three Assignments)</b>
<b>10</b>	Write a program of Form processing using JavaScript and Validation of form using JavaScript
<b>11</b>	To create an html page to explain the use of various predefined functions in array & Date object in Javascript.
<b>12</b>	To display the calendar using javascript code by getting the year from the user.
<b>13</b>	To create a html registration form and to validate the form using javascript code.
<b>14</b>	To write a program to create xml document using XML language.

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<b>Group C: (Any One Assignments)</b>	
<b>15</b>	To create a table of content using ASP program & navigate within the pages.
<b>16</b>	a) To create ASP program to demonstrate request & response object method. b) To display all the content in the database using ASP program.
<b>17</b>	a) To create a CD catalog using XML file b) To create external style sheet and using the style sheet in xml file

### **Term Work:**

Term Work assessment shall be conducted for the Project, Tutorials and Seminar. Term work is continuous assessment based on work done, submission of work in the form of report/journal, timely completion, attendance, and understanding. It should be assessed by subject teacher of the institute. At the end of the semester, the final grade for a Term Work shall be assigned based on the performance of the student and is to be submitted to the University.

### **Notes**

1	The experiments from the regular practical syllabus will be performed (30 Marks).
2	The regular attendance of students during the syllabus practical course will be monitored and marks will be given accordingly (10 Marks).
3	Good Laboratory Practices (10 Marks)

### **Practical/Oral/Presentation:**

Practical shall be conducted and assessed jointly by internal and external examiners. The performance in the Practical examination shall be assessed by at least a pair of examiners appointed as examiners by the University. The examiners will prepare the mark/grade sheet in the format as specified by the University, authenticate and seal it. Sealed envelope shall be submitted to the head of the department or authorized person.

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