



**MCA  
Semester V**

Course Code	PS05CMCA22	Title of the Course	Distributed Systems, Parallel Computing and Simulation
Total Credits of the Course	4	Hours per Week	4

Main Focus of the Course outcomes	Employability	Skill Development	Entrepreneurship
	✓	✓	
Course Objectives:	<ol style="list-style-type: none"> <li>To understand the basic concepts of cloud computing and distributed systems.</li> <li>To acquire basic information about various cloud platforms.</li> <li>To learn various applications and benefits of cloud computing.</li> <li>To study design issues, system models and processor allocation algorithms for distributed systems.</li> </ol>		

Course Content		
Unit	Description	Weightage* (%)
1.	<b>Distributed Systems - I</b> <ul style="list-style-type: none"> <li>Basic concepts</li> <li>Advantages and Disadvantages of Distributed systems</li> <li>Tightly coupled and Loosely coupled systems,</li> <li>Hardware and Software Requirements</li> <li>Design Issues.</li> <li>Distributed File system Design</li> </ul>	25
2.	<b>Distributed Systems – II &amp; Parallel Processing</b> <ul style="list-style-type: none"> <li>Implementation Methodologies :</li> <li>System Models for Organization of processors in a Distributed systems</li> <li>Processor Allocation Models</li> <li>Synchronization Aspects</li> <li>Introduction to Parallel Processing</li> <li>Parallel Processing Terminologies</li> </ul>	25





3.	<p><b>Simulation - I</b></p> <ul style="list-style-type: none"> <li>- Introduction</li> <li>- Applications</li> <li>- Advantages &amp; Disadvantages</li> <li>- Examples of simulation</li> <li>- Continuous system simulation</li> <li>- Examples</li> <li>- Numerical Integration Vs. Continuous system simulation</li> <li>- Analog Vs. Digital simulation</li> <li>- Discrete system simulation</li> <li>- Examples</li> <li>- Fixed time-step &amp; Event-to-event model</li> <li>- Simulating randomness</li> <li>- Generation of non-uniformly distributed random numbers</li> <li>- Monte-Carlo Computation and its applications.</li> </ul>	25
4.	<p><b>Simulation - II</b></p> <ul style="list-style-type: none"> <li>- System, System environment, attributes, activities, types of activities</li> <li>- Types of models</li> <li>- Principles used in modeling</li> <li>- System Studies</li> <li>- Types of system study</li> <li>- Different computational techniques used in simulation</li> <li>- Distributed lag models</li> <li>- Cobweb model</li> <li>- Process of simulating</li> <li>- Design and Evaluation of Simulation Experiments</li> <li>- Validation</li> <li>- Introduction to Simulation Language</li> </ul>	25

Teaching-Learning Methodology	Blended learning approach incorporating traditional classroom teaching as well as online / ICT-based teaching practices
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Evaluation Pattern		
Sr.	Details of the Evaluation	Weightage





No.		
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to

1.	understand concepts of cloud computing and distributed systems.
2.	understand the cloud service models & deployment models.
3.	gain knowledge of concept related to virtualization.
4.	gain basic understanding of the design issues, system models and processor allocation strategies for distributed.

Suggested References:

Sr. No.	References
1.	Tanenbaum Andrew S: Distributed Operating System, Addison Wesley, 2001.
2.	Quinn Michael J: Parallel Computing – Theory and Practice (second edition), McGraw-Hill Pub., 1994.
3.	Hira D. S. : System Simulation, S Chand & Co., Ltd., 2001.
4.	Gordon Geoffrey : System Simulation, Prentice-Hall of India, New Delhi, 2001.
5.	Deo Narsingh : System Simulation with Digital Computer, Prentice-Hall of India, New Delhi, 1999.
6.	Law A M & Kelton W D: Simulation Modeling & Analysis, Tata McGraw-Hill, International Series, 2000.

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Vallabhnagar, Gujarat  
(Recognized with 'A' Grade by NAAC (CGPA 3.25))

**SARDAR PATEL UNIVERSITY**

**Syllabus with effect from the Academic Year 2019-2020**

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