

**PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY**

(Autonomous)

Kanuru, Vijayawada-520007

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING(AI&ML)**

### III B Tech – I Semester

## Cloud Computing

<b>Course Code</b>	23AM4501B	<b>Year</b>	III	<b>Semester</b>	I
<b>Course Category</b>	PEC	<b>Branch</b>	CSE (AI&ML)	<b>Course Type</b>	Theory
<b>Credits</b>	3	<b>L-T-P</b>	3-0-0	<b>Prerequisites</b>	Computer Fundamentals
<b>Continuous Internal Evaluation</b>	30	<b>Semester End Evaluation</b>	70	<b>Total Marks</b>	100

## Course Outcomes

**Upon Successful completion of course, the student will be able to**

<b>CO1</b>	Describe the key concepts and components of cloud computing to illustrate its significance in cloud-enabled computing environments.	<b>L2</b>
<b>CO2</b>	Apply cloud architecture and distributed computing principles to implement service models, deployment types, and communication mechanisms in cloud environments.	<b>L3</b>
<b>CO3</b>	Apply advanced cloud infrastructure and security concepts to deploy secure and efficient cloud solutions using federated models and industry platforms.	<b>L3</b>
<b>CO4</b>	Analyze distributed computing principles, cloud security architectures, and industrial platforms to assess the effectiveness of secure and efficient cloud-based solutions.	<b>L4</b>

**Contribution of course outcomes towards achievement of program outcomes & Strength of correlations (3: Substantial,2: Moderate,1: Slight)**

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING(AI&ML)****III B Tech – I Semester****Syllabus**

<b>Unit No</b>	<b>Contents</b>	<b>Map ped CO</b>
<b>I</b>	<b>Introduction to Cloud:</b> Cloud Computing at a Glance, The Vision of Cloud Computing, Defining a Cloud, A Closer Look, Cloud Computing Reference Model, Characteristics and Benefits. <b>Virtualization:</b> Introduction, Characteristics of Virtualized Environment, Taxonomy of Virtualization Techniques, Virtualization and Cloud computing, Pros and Cons of Virtualization	CO1
<b>II</b>	<b>Cloud Computing Architecture:</b> Introduction, Cloud Reference Model, Architecture, Infrastructure / Hardware as a Service, Platform as a Service, Software as a Service, Types of Clouds, Public Clouds, Private Clouds, Hybrid Clouds, Community Clouds. Economics of the cloud, cloud interoperability and standards, scalability and fault tolerance.	CO1, CO2
<b>III</b>	<b>Principles of Parallel and Distributed Computing:</b> parallel and distributed computing, elements of parallel computing, hardware architectures for parallel computing (SISD, SIMD, MISD, MIMD), elements of distributed computing, Models for Inter-process communication, technologies for distributed computing, remote procedure calls (RPC), service-oriented architecture (SOA), Web services.	CO1, CO2, CO4
<b>IV</b>	<b>Advanced Topics in Cloud Computing:</b> Energy efficiency in clouds, federated clouds. <b>Cloud Security:</b> cloud computing security, fundamentals of computer security, cloud security architecture, cloud shared responsibility model, security in cloud deployment models	CO1, CO3, CO4
<b>V</b>	<b>Cloud Platforms in Industry:</b> Amazon Web Services- Compute Services, Storage Services, Communication Services and Additional Services. <b>Google App Engine:</b> Architecture and Core Concepts, Application Life-Cycle, Cost Model. <b>Microsoft Azure:</b> Azure Core Concepts, SQL Azure.	CO1, CO3, CO4

**Learning Resources****Text Books**

1. Mastering Cloud Computing, Rajkumar Buyya, Christian Vecchiola, Thamarai Selvi, Shivananda Poojara, and Satish N. Srirama, 2nd Edition, 2024, McGraw-Hill Education.
2. Distributed and Cloud Computing, Kai Hwang, Geoffrey C. Fox, and Jack J. Dongarra, 1st Edition, 2012, Elsevier

**References**

1. Cloud Computing: Theory and Practice, Dan C. Marinescu, 2nd Edition, 2018, Morgan Kaufmann (Elsevier).
2. Essentials of Cloud Computing, K. Chandrasekaran, 1st Edition, 2014, CRC Press.
3. Online Documentation and Tutorials, Cloud Service Providers (e.g., AWS, Azure, GCP), Latest Edition, Official Websites

**E-Recourses and other Digital Material**

1. [https://onlinecourses.nptel.ac.in/noc21\\_cs14/preview](https://onlinecourses.nptel.ac.in/noc21_cs14/preview)
2. [https://onlinecourses.nptel.ac.in/noc22\\_cs18/preview](https://onlinecourses.nptel.ac.in/noc22_cs18/preview)