

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**

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

Course Outcomes

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

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

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	2												
CO2	3												
CO3	3												
CO4		3									2		

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III B Tech – I Semester

Syllabus

Unit No	Contents	Map ped CO
I	Introduction to Cloud: Cloud Computing at a Glance, The Vision of Cloud Computing, Defining a Cloud, A Closer Look, Cloud Computing Reference Model, Characteristics and Benefits. Virtualization: Introduction, Characteristics of Virtualized Environment, Taxonomy of Virtualization Techniques, Virtualization and Cloud computing, Pros and Cons of Virtualization	CO1
II	Cloud Computing Architecture: 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
III	Principles of Parallel and Distributed Computing: 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
IV	Advanced Topics in Cloud Computing: Energy efficiency in clouds, federated clouds. Cloud Security: cloud computing security, fundamentals of computer security, cloud security architecture, cloud shared responsibility model, security in cloud deployment models	CO1, CO3, CO4
V	Cloud Platforms in Industry: Amazon Web Services- Compute Services, Storage Services, Communication Services and Additional Services. Google App Engine: Architecture and Core Concepts, Application Life-Cycle,Cost Model. Microsoft Azure: Azure Core Concepts, SQL Azure.	CO1, CO3, CO4

Learning Resources

Text Books

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

References

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

E-Recourses and other Digital Material

- https://onlinecourses.nptel.ac.in/noc21_cs14/preview
- https://onlinecourses.nptel.ac.in/noc22_cs18/preview