PARVATHANENI BRAHMAYYA SIDDHARTHA COLLEGE OF ARTS & SCIENCE
Autonomous
Siddhartha Nagar, Vijayawada-520010
Re-accredited at 'A+'by the NAAC

Offered to: M.C.A

22CA4E3: CLOUD COMPUTING

CourseDescriptionandPurpose: Cloud Computingis a course that illustrates *concepts of Cloud Computing* and *Virtualization*, *Services* and *Deployment Models of Cloud Computing*, Developing Cloud *Applications* using *Open Source Cloud Software*, *AAA Model*, Challenges and Benefits of *Mobile Cloud Computing.*

Course Objectives: Thiscoursewillhelp enable the students t o understand and learn various *Concepts* of*Key Technologies*, *Strengths*, and *Limitations* of *Cloud Computing*, core issues of *Virtualization, Open Source Architectures, Services of Cloud Computing,* Develop and deploy *Cloud Applications* using *Popular Cloud Platform, Risks*, *Consequences* and *Costs of Cloud Computing and Mobile Cloud Computing*

Course Outcomes:

On successful completion the students should be able to

CO1: What is Virtualization and its Benefits,Mechanisms,Server Virtualization versus Cloud Computing.

CO2: Infer about Open-Source Cloud Implementations,Application Architecture for Cloud, AAA Administration for Clouds.

CO3: Analyze Stages during the development process of Cloud Application,Cloud Computing Service Delivery Models.

CO4: Explain about Mobile Cloud Computing, Programming Support for Google Apps Engine,Amazon EC2,Elastic Block Store (ESB).

CO5: Discuss Risks, Consequences and Costs for Cloud Computing, Cloud Computing Services.

CO-PO MATRIX							
COURSE CODE	**CO-PO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO1	H	H				
	CO2	H	M	H			M
	CO3		H		M		
	CO4		M	H			
	CO5	H			H	H	

UNIT-I (12 Hours)

Era of Cloud Computing: Getting to Know the Cloud, Peer-to-Peer, Client-Server and Grid Computing, Cloud Computing versus Client-Server Architecture, Cloud computing versus Peer-To Peer Architecture, Cloud computing versus Grid Computing, How we got to the Cloud, Server Virtualization versus Cloud Computing, Components of Cloud Computing, Cloud Types, Cloud Computing Service Delivery Models.

Introducing Virtualization: Introducing Virtualization and its Benefits, Implementation Levels of Virtualization, Virtualization at the OS Level, Virtualization Structure, Virtualization Mechanisms, Open Source Virtualization Technology, Binary Translation with Full Virtualization, Virtualization of CPU, Memory and I/O Devices, Hardware support for Virtualization in Intex x86 Processor

UNIT-II (12 Hours)

Cloud Computing Services: Infrastructure as a Service, Platform as a Service, Language and Pass, Software as a Service, Database as a Service.

Open Source Cloud Implementations and Administration: Open-Source Eucalyptus Cloud Architecture, Open-Source Open Stack Cloud Architecture

UNIT-III (12 Hours)

Application Architecture for Cloud: Cloud Application Requirements, Recommendations for Cloud Application Architecture, Fundamental Requirements for Cloud Application Architecture, Relevance and use of Client-Server architecture for Cloud Application, Service Oriented Architecture for Cloud Applications.

Cloud Programming: Programming Support for Google Apps Engine, Big Table as Google's NOSQL System, Chubby as Google Distributed Lock Service, Programming Support for Amazon EC2, Elastic Block Store (ESB).

UNIT-IV (12 Hours)

Risks, Consequences and Costs for Cloud Computing: Introducing Risks in Cloud Computing, Risk Assessment and Management, Risk of Vendor Lock-In, Risk of Loss Control, Risk of Not Meeting Regulatory Compliances, Risk of Resource Scarcity, Risk in Multi Tenant Environment, Risk of Failure, Risk of Failure of Supply Chain, Risk of Malware and Internet Attacks, Risk of Inadequate SLA , Risk of Management of Cloud Resources, Risk of Network Outages, Risks in the Physical Infrastructure, Legal Risk due to Legislation, Risks with Software and Application Licensing, Security and Compliance Requirements in a Public Cloud, Direct and Indirect Cloud Costs, Calculating Total Cost of Ownership for Cloud Computing, Cost Allocations in a Cloud.

AAA Administration for Clouds: The AAA Model, Single Sign-On for Clouds, Industry Implementations for AAA, Authentication Management in the Cloud, Authorization Management in the Cloud.

UNIT-V (12 Hours)

Application Development for Cloud: Developing On-Premise Versus Cloud Applications, Modifying Traditional Applications for Deployment in Cloud, Stages during the development process of Cloud Application, Managing a Cloud Application, Using Agile Software Development for Cloud Application, Cloud Applications: What Not to do, Static Code Analysis for Cloud Applications, Developing Synchronous and Asynchronous Cloud Applications.

Mobile Cloud Computing: Definition of Mobile Cloud Computing, Architecture of Mobile Cloud Computing, Benefits of Mobile Cloud Computing, Mobile Cloud Computing Challenges.

Prescribed Text Books			
	Author	Title	Publisher
1	Kailash Jayaswal,JagannathKallakurchi, Donald J. Houde & Dr. Deven Shah	Cloud Computing, Black Book	DreamTech Press

Reference Text Books			
	Author	Title	Publisher
1	Thomas Erl, Zaigham Mahmood, Ricardo Puttini	Cloud Computing Concepts Technology and Architecture	Pearson
2	Raj Kumar Buyya, Christen Vecctiola, S Tammaraiselvi	Mastering Cloud Computing, Foundations and Application Programming	TMH

M.C.A **Semester:IV**

Course Code: 22CA4E3 Course Name: Cloud Computing

Time: 3 Hours **Max Marks: 70**

SECTION-A

Answer the following questions. (5×4=20Marks)

1. (a) Explain SaaS (CO6, L2)

(or)

(b) Explain Virtualization (CO1, L2)

2. (a) What is an Open Source? (CO2, L1)

(or)

(b) What is Eucalyptus? (CO2, L1)

3. (a) What are the advantages of SOA? (CO2, L1)

(or)

(b) What are the drawbacks of GFS? (CO5, L1)

4. (a) Explain the risk of Malware (CO6, L5)

(or)

(b) Explain Authentication (CO2, L5)

5. (a) What not to do in Cloud Application Development? (CO4, L1)

(or)

(b) What are the advantages of MCC? (CO5, L1)

SECTION-B

Answer the following questions. **(5×10=50Marks)**

6. (a) Explain the various Types of Cloud with neat diagrams. (CO4, L2)

(b) Compare and contrast Cloud Computing Architecture with Peer to Peer Architecture. (CO1, L2)

(or)

(c) Explain Virtualization and its benefits and levels. (CO1, L2)

7. (a) Discuss Cloud Computing Services on private cloud. (CO6, L6)

(or)

(b) Design Open-Source Cloud Architecture with example. (CO2, L6)

8. (a) What are the requirements of Cloud Application? (CO2, L1)

(or)

(b) What is Big Table as Google's NoSQL System? Explain EBS. (CO5, L1)

9. (a) Explain Risks in Cloud Computing. (CO6, L5)

(or)

(b) ExplainAAA Model for Clouds. (CO2, L5)

10 (a) ExplainStages during the Development Process of Cloud Applications. (CO4, L5)

(or)

(b) Explain Mobile Cloud Computing its Advantages and Disadvantages. (CO5, L5)