COURSE TITLE	**FUNDAMENTALS OF CLOUD SECURITY**
COURSE CODE	**05CA0503**
COURSE CREDITS	**2**

Objective:

1 Understand the fundamental concepts of cloud security and its significance in modern computing.
2 Explain the types of risks associated with cloud computing environments.
3 Analyze data security techniques and evaluate their effectiveness in protecting cloud-based information.

Course Outcomes: After completion of this course, student will be able to:

1 Identify various risks associated with cloud computing.
2 Explain key principles and practices of data security in the cloud.
3 Demonstrate an understanding of Cloud Data Management Interface (CDMI) standards.
4 Evaluate Total Cost of Ownership (TCO) models for cloud computing solutions.

Pre-requisite of course:BASIC KNOWLEDGE OF CLOUD SECURITY

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	**Risk in cloud computing & Data security** Risk in cloud computing, risk assessment and management, Risk of vendor lock-in, loss of control, risk of resource scarcity /poor provisioning, Risk in multi-tenant environment, risk of failure risk of malware and internet attacks, Risk of management of cloud resource risk of network outages, Risk of physical infrastructure legal risk, risk with software and application licensing, Data security in the cloud - data redundancy, data recovery, Data backup data replication, data residency or location, data reliability, Data fragmentation, data integration, data transformation, Data migration, data confidentiality & encryption, key protection, Data availability, data integrity	15

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Contents : Unit	Topics	Contact Hours
2	**Cloud data management interface** Cloud data management interface, cloud storage gateways and its advantages, Cloud firewall, virtual firewall, Application security in the cloud – Cloud application software lifecycle, Application security in an IaaS, PaaS and SaaS environment and its protection, TCO for cloud computing, direct and indirect cloud cost, cost allocations in a cloud, chargeback models for allocation of direct, and indirect cost, chargeback methodology, maintaining strategic flexibility in a cloud.	15
Total Hours		**30**

Textbook :

1 Practical Cloud Security: A Guide for Secure Design and Deployment, Chris Dotson, O'Reilly Media, 2019

2 Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance, Tim Mather, Subra Kumaraswamy, Shahed Latif, O'Reilly Media, 2009

References:

1 Cloud Security Handbook: Find Out How to Effectively Secure Cloud Environments Using AWS, Azure, and GCP, Cloud Security Handbook: Find Out How to Effectively Secure Cloud Environments Using AWS, Azure, and GCP, Eyal Estrin, Packt Publishing, 2022

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
10.00	15.00	25.00	25.00	25.00	0.00

Instructional Method:

1 Boardwork, PPT

Supplementary Resources:

1 https://www.esecurityplanet.com/cloud/cloud-security-fundamentals/

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