FACULTY OF COMPUTER APPLICATIONS
BCA (Hons) Cloud Computing

- **Sem.** : 7
- **Subject Code** : 05BH0704
- **Subject** : Cloud Computing Security
- **Course Objectives** :

1. To understand the fundamentals of Cloud Computing and cloud Security
2. To comprehend Cloud Computing Software Security basics
3. To understand theCloud Computing risk and Security issues
4. To understand various challenges during Cloud Computing security
5. To understand various life cycle issues of cloud security

- **Prerequisites** : Cloud Computing Fundamentals, Knowledge of Networking , Operating Systems

Unit No	Topics Covered	No of lectures required
1	**Cloud Computing Fundamentals** • Introduction Essential Characteristics • Architectural Influences • Technological Influences • Operational Influences **Cloud Computing Architecture** • Cloud Delivery Models(IaaS, PaaS, SaaS) • Cloud Deployment Models (Public, Private, Hybrid) • Expected Benefits of using cloud platform	**14**
2	**Cloud Computing Software SecurityFundamentals** • Cloud Information Security Objectives • Cloud Security Services • Cloud Security Design Principles • Secure Cloud Software Requirements • Secure Cloud Software Testing • Cloud Computing and Business Continuity Planning/Disaster	**12**

3	**Cloud Computing Risk Issues** • The CIA Triad • Privacy and Compliance Risks • Common Threats and Vulnerabilities • Cloud Access Control Issues • Cloud Service Provider Risks	**10**
4	**Cloud Computing Security Challenges** • Policy Types • Computer Security Incident Response Team (CSIRT) • Virtualization Security Management • VM Security Recommendations • VM-Specific Security Techniques **Cloud Computing Security Architecture** • General Issues • Trusted Cloud Computing • Secure Execution Environments and Communications • Microarchitectures	**12**
5	**Identity Management and Access Control** • Identity Management • Access Control • Autonomic Security **Cloud Computing Life Cycle Issues** • Standards • The Distributed Management Task Force (DMTF) • The International Organization for Standardization (ISO) • The Open Web Application Security Project (OWASP) • Incident Response • VM Life Cycle	**12**

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Course Outcomes:

1. **Apply** security design principles to optimize secure cloud software solutions, ensuring compliance with cloud security objectives and standards.
2. **Apply** identity management and access control techniques to enhance security within cloud computing ecosystems.
3. **Analyze** cloud security incidents and challenges through case studies to propose practical solutions for secure cloud computing implementations.
4. **Analyze** cloud security risks, including privacy, compliance, and provider-related threats, to identify potential vulnerabilities and mitigation strategies.
5. **Evaluate** different cloud security architectures and policies to determine their effectiveness in addressing security challenges in cloud environments.

Course Outcomes – Program Outcomes Mapping Table:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	M	H	L	L					M	L	
CO2	M	H	M	M	L				M	M	L
CO3	M	H	H						L	H	M
CO4			H	M	M	H	M	M		M	H
CO5	M	L	M	M					L	L	M

Text Book:

1. Cloud Security – A Comprehensive Guide to Secure Cloud Computing, Ronald L. Krutz and Russell Dean Vines, Wiley Publishing Inc.

Reference Books:

1. Cloud Computing Security – Foundations and Challenges, John R. Vacca, CRC Press
2. Practical Cloud Security: A Guide for Secure Design and Deployment, Chris Dotson, O'REILLY
3. Elements of Cloud Computing Security – A Survey of Key Practicalities, Mohammed M. Alani, Springer
4. Cloud Security and Privacy, Tim Mather, Subra Kumaraswamy, and Shahed Latif, O'REILLY
5. Cloud Security for dummies, Ted Coombs, John Wiley & Sons, Inc.

Web References:

1. www.cloudsecurityalliance.org
2. www.forcepoint.com/cyber-edu/cloud-security

App References:

1. CCSK Practice Demo – Cloud Security
2. Complete Cloud Computing Guide

Syllabus Coverage from text /reference book & web/app reference:

Unit #	Chapter Numbers
1	Chapter 1 & 2
2	Chapter 3
3	Chapter 4
4	Chapter 5 &6
5	Chapter 7

CASE STUDY

1. Prepare a case study for cloud security incidents.
2. Prepare a case study for cloud security challenges in implementation.