

UNIT IV

Introduction to Cloud Computing, Service Model, Deployment Model: Virtualization Concepts, Cloud Platforms: Amazon AWS, Microsoft Azure ,Google APIs.

IoT and the Cloud , Role of Cloud Computing in IoT ,AWS Components: S3:Lambda – AWS, IoT Core: Connecting a web application to AWS, IoT using MQTT, AWS IoT Examples.

UNIT V

Security Concerns, Risk, Issues, and Legal Aspects of Cloud Computing- Cloud Data Security., Vulnerability Scanning, IOT Network segmentation, Robust Security protocols

SUGGESTED READINGS

1. “The Internet of Things: Enabling Technologies, Platforms, and Use Cases”, by Pethuru Raj and Anupama C. Raman, CRC Press.
2. Adrian McEwen, Designing the Internet of Things, Wiley, 2013.

Course Code	Type	Subject	L	T	P	Credits	TCA	TMS	TES	PCA	PES	Pre-requisites
COCSE29	ED	Data Security and Privacy	3	1	0	4	25	25	50	-	-	DBMS

Course Objectives

C01- Interpret the key concept of data security, authentication, and authorization.

C02- Identify the security issues in the data network and resolve it.

C03- Describe the privacy aspects and anonymization models.

C04- Identify the key technologies used for privacy preservation

C05- To know about the current research on data security and privacy preservation in the emerging domains.

COURSE CONTENT

UNIT-I

INTRODUCTION TO DATA PRIVACY and SECURITY

Fundamentals of Data Privacy & Security, Databases and Exploratory Data Analysis, Data Representation and Storage, Authentication and Authorization, Database Security, Data protection and privacy laws with overview of cyber-crime laws, consumer protection and e-transaction laws.

UNIT-II

DATA SECURITY FUNDAMENTALS

Classical Encryption Techniques Symmetric, Block Ciphers and the data encryption standard: Traditional block Cipher structure, stream Ciphers and block Ciphers, the Feistel Cipher. Public-Key Cryptography: Principles of Public-key Cryptosystems, Public-Key Cryptosystems, RSA, Diffie-Hellman Key Exchange Algorithm, key distribution. Public keys certificates, X.509 certificates. Public key infrastructure, PKIX Management Functions & Protocols.

UNIT III

AUTHENTICATION & AUTHORIZATION

Authentication Vs Authorization, Authentication Methods –Password authentication, Public Key Cryptography, Biometric authentication, Out of band, Authentication Protocols – SSL, Password Authentication Protocol (PAP), Kerberos, Email authentication- PGP, Database authentication, Message authentication; secure hash functions and Authorization Approaches to hmac; Public-key cryptography algorithms, digital signatures, key management. Kerberos, x.509 directory authentication service. Authorization Definition, Multilayer authorization,

UNIT IV

DATA PRIVACY AND ANONYMIZATION

Understanding Privacy: Social Aspects of Privacy Legal Aspects of Privacy and Privacy Regulations Effect of Database and Data Mining technologies on privacy challenges raised by new emerging technologies such as RFID, biometrics, etc., Privacy Models, Introduction to Anonymization, Anonymization models: K-anonymity, l-diversity, t-closeness, differential privacy Database as a service

UNIT V

DATA PRIVACY FOR DATA SCIENCE

Using technology for preserving privacy. Statistical Database security Inference Control Secure Multi-party computation and Cryptography Privacy-preserving Data mining

Hippocratic databases Emerging Applications: Social Network Privacy, Location Privacy, Query Log Privacy, Biomedical Privacy

REFERENCES AND TEXTBOOKS:

1. William Stallings, Cryptography and Network Security Principles and Practice, 6th edition, Pearson Education
2. Charu C Aggarwal, Yu Philips, S., Privacy-Preserving Data Mining- Models and Algorithms, Springer
3. Michael E. Whitman and Herbert J. Mattord, Principles of Information Security, Information Security Professional - 4th Edition, Thompson
4. Padmanabhan T R, Shyamala C and Harini N, "Cryptography and Security", Wiley Publications 2011.
5. Josef Pieprzyk, Thomas Hardjono and Jenifer Seberry, "Fundamentals of Computer Security", Springer 2010.

4.4.4 SYLLABI OF DEPARTMENT ELECTIVES COURSES : VII & VIII SEMESTERS

Cour se Code	Ty pe	Subject	L	T	P	Cre dits	TC A	TM S	TE S	PC A	PE S	Pre-requisites
COCS E50	ED	Service Oriented Architecture	3	1	0	4	25	25	50	0	0	Computer Networks,Opera ting Systems

COURSE OUTCOMES

1. Understand the basic principles of service orientation and service-oriented analysis techniques
2. Gain an insight in the technology underlying the service design and learn advanced concepts such as service composition, orchestration and choreography
3. Acquire skills to apply various components of service-oriented architecture such as SOAP, Entity-centric business service design, application service design and their combination to implement the solutions.
4. Ability to plan, analyze and design enterprise software applications based on service-oriented architecture.
5. Learning the emerging trends in service-oriented architecture.

COURSE CONTENT