

Keshav Mahavidyalaya

(University of Delhi)

The Department of Computer Science

Teaching Plan

Name of the Teacher: **Ms. Jyoti Kumari**

Course: **B.Sc. Hons, GE-4**

Session: **2021-22,** Semester: **IV**

Paper: (GE) **Information Security and Cyber Laws**

(UPC:32345402)

Learning Outcomes:

1. use of Security Systems
2. password protecting different types of files
3. use the concept different cyber-attacks and overcoming it.
4. Encryption/decryption of plain text/cipher text.

Month	Topics Covered	References
January	Unit 1: Definitions :Protection, Security, risk, threat, vulnerability, exploit, attack, confidentiality, integrity, availability, non-repudiation, authentication , authorization, codes, plain text, encryption, decryption, cipher text, key, ciphers, Symmetric and asymmetric cryptography, Public key , private key ,Crypt analysis,, Cyber forensics. Substitution cipher (Caesar), Transposition cipher (Rail-Fence) Practical- 1,2	[3]
February	Unit 2: Risk analysis, process, key principles of conventional computer security, security policies, data protection, access control, internal vs external threat, security assurance, passwords, access control, computer forensics and incident response. Test -1 Practical- 3, 4	[1]
March	Unit 3: CYBER ATTACKS (definitions and examples): Denial-of-service attacks, Man-in-the middle attack, Phishing, spoofing and spam attacks, Drive-by attack, Password attack, SQL injection attack, Cross-site scripting attack, Eavesdropping attack, Birthday attack, Malware attacks, Social Engineering attacks	[4]

References:

- [1] Merkow, M., & Breithaupt, J.(2005) Information Security Principles and Practices. 5th edition. Prentice Hall.
- [2]. Snyder, G.F. (2010). Network Security, Cengage Learning.
- [3] Whitman, M. E. & Mattord, H. J. (2017) Principles of Information Security. 6th edition. Cengage Learning.

Additional Resources:

- [A1] Basta, A., & Halton, W., (2010) Computer Security: Concepts, Issues and Implementation, Cengage Learning India.
- [A2] Charles P. Pfleeger, Shari Lawrence Pfleeger, Security in Computing,4 th Edition,
- [A3] Sushila Madan, Cyber Crimes and Laws, Scholar Tech Press (MKM Publishers Pvt. Ltd) Second Revised Edition, 2017

Online Resources:

- [1]. <https://blog.netwrix.com/2018/05/15/top-10-most-common-types-of-cyber-attacks/>
- [2]. <https://www.ibef.org/industry/infrastructure-sector-india.aspx>
- [3]. <https://www.ibm.com/in-en/topics/infrastructure>
- [4]. <https://business.mapsofindia.com/india-budget/infrastructure/it.html>
- [5]. <https://nasscom.in/knowledge-center/publications/it-infrastructure-services-digital-era>
- [6]. <https://digitalindia.gov.in/infrastructure>

Keshav Mahavidyalaya

(University of Delhi)

The Department of Computer Science

Teaching Plan

Name of the Teacher: **Ms. Jyoti Kumari**

Course: **B.Sc. Mathematical Science**

Session: **2021-22,** Semester: **II**

Paper: (Core) **Database Management System (UPC: 42341202)**

Learning Outcomes:

1. use database management system to manage data.
2. create entity relationship diagrams for modelling real-life situations and design the database schema.
3. use the concept of functional dependencies to remove data anomalies and arrive at normalized database design.
4. write queries using relational algebra and SQL.

Month	Topics Covered	References
April	Introduction to Database Management Systems: Characteristics of database approach, data models, DBMS architecture and data independence. Practical- use of DDL and DML commands, 1,2	[1]
May	Entity Relationship and Enhanced ER Modeling: Entity types, relationships, SQL: Schema Definition, constraints, and object modeling. Test -1 Practical- 3(1-10)	[1]
June	Relational Data Model and Relational Algebra: Basic concepts, relational constraints, relational algebra. Assignment - 1 Practical- 3(11-20)	[1]
July	Database design: Mapping of ER and EER diagram to relational algebra, functional dependencies, normal forms up to third normal form and Normalization. Test - 2 Practical- 3(21-31)	[1]

References:

- [1] Elmasri, R., & Navathe, S. (2017). Fundamentals of Database Systems. 7th edition. Pearson Education.