BA / B. Sc. 5th SEMESTER
DISCIPLINE SPECIFIC ELECTIVES (DSEs)
OPTION - I

CAP520D1A: COMPUTER APPLICATIONS: INFORMATION SECURITY

CREDITS: THEORY: 4; PRACTICAL: 2
MAX. MARKS: THEORY: 60; PRACTICAL: 30
MIN. MARKS: THEORY: 24; PRACTICAL: 12

THEORY: 60 LEfaCTURES

UNIT I

1. Introduction **(5 Lectures)**

Security, Attacks, Computer Criminals, Security Services, Security Mechanisms

2. Cryptography **(10 Lectures)**

Substitution ciphers, Transpositions Cipher, Confusion, diffusion, Symmetric, Asymmetric Encryption. DES, Modes of DES, Uses of Encryption, Hash function, key exchange, Digital Signatures, Digital Certificates.

UNIT II **(8 Lectures)**

3. Program Security

Secure programs, Non malicious Program errors, Malicious codes virus, Trap doors, Salami attacks, Covert channels, Control against program

4. Threats. **(7 Lectures)**

Protection in OS: Memory and Address Protection, Access control, File Protection, User Authentication.

UNIT III **(7 Lectures)**

5. Database Security

Requirements, Reliability, Integrity, Sensitive data, Inference, Multilevel Security.

6. Security in Networks **(8 Lectures)**

Threats in Networks, Security Controls, firewalls, Intrusion detection systems, Secure e-mails

UNIT IV

7. Administrating Security **(15 Lectures)**

Security Planning, Risk Analysis, Organisational Security Policy, Physical Security. Ethical issues in Security: Protecting Programs and data. Information and law

RECOMMENDED BOOKS:

1. C. P. Pfleeger, S. L. Pfleeger; Security in Computing, Prentice Hall of India, 2006
2. W. Stallings; Network Security Essentials: Applications and Standards, 4/E, 2010

PRACTICAL: 2 CREDITS; 60 LECTURES

1. Demonstrate the use of Network tools: ping, ipconfig, ifconfig, tracert, arp, netstat, whois
2. Use of Password cracking tools : John the Ripper, Ophcrack. Verify the strength of passwords using these tools.
3. Perform encryption and decryption of Caesar cipher. Write a script for performing these operations.
4. Perform encryption and decryption of a Rail fence cipher. Write a script for performing these operations.
5. Use nmap/zenmap to analyse a remote machine.
6. Use Burp proxy to capture and modify the message.
7. Demonstrate sending of a protected word document.
8. Demonstrate sending of a digitally signed document.
9. Demonstrate sending of a protected worksheet.
10. Demonstrate use of steganography tools.
11. Demonstrate use of gpg utility for signing and encrypting purposes.

BA / B. Sc. 5th SEMESTER
DISCIPLINE SPECIFIC ELECTIVES (DSEs)
OPTION - II

CAP520D1B: COMPUTER APPLICATIONS: DATA MINING

CREDITS: THEORY: 4; PRACTICAL: 2
MAX. MARKS: THEORY: 60; PRACTICAL: 30
MIN. MARKS: THEORY: 24; PRACTICAL: 12

THEORY: 60 LECTURES

UNIT-I (15 Lectures)

Predictive and descriptive data mining techniques, supervised and unsupervised learning techniques, process of knowledge discovery in databases, pre-processing methods.

UNIT-II (15 Lectures)

Association Rule Mining, Association Analysis: Basic concepts, Algorithm, Advanced concepts

UNIT-III (15 Lectures)

Classification and Regression Techniques, Basic Concepts, Decision Trees, Model Evaluation

UNIT-IV (15 Lectures)

Cluster Analysis: Basic Concepts and Algorithm, Scalability and data management issues.

BOOKS RECOMMENDED:

1. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson Education.2005.
2. Richard Roiger, Michael Geatz, Data Mining: A Tutorial Based Primer, Pearson Education 2003.
3. G.K. Gupta, Introduction to Data Mining with Case Studies, PHI,2006.
4. Soman K P, DiwakarShyam, Ajay V Insight Into Data Mining: Theory And Practice,, PHI, 2006

PRACTICAL: 2 CREDITS; 60 LECTURES

Practical Exercises based on concepts listed in theory.