Course Title: Network Security
Course no: CSC-455 Full Marks: 60+20+20
Credit hours: 3 Pass Marks: 24+8+8

Nature of course: Theory (3 Hrs.) + Lab (3 Hrs.)

Course Synopsis: Study of different network security concepts and methods

Goal: In this age of universal electronic connectivity, viruses and hackers, electronic eavesdropping, and electronic fraud, security is paramount. This course provides a practical survey of the principles and practice of network security.

Course Contents:

1. **Introduction** 6**hrs**.

   1.1 Computer Security Concepts
   1.2 The OSI Security Architecture
   1.3 Security Attacks
   1.4 Security Services
   1.5 Security Mechanisms
   1.6 A Model for Network Security

2. **Key Management and Distribution** 5**Hrs.**

   2.1 Symmetric Key Distribution Using Symmetric Encryption
   2.2 Symmetric Key Distribution Using Asymmetric Encryption
   2.3 Distribution of Public Keys
   2.4 X.509 Certicates
   2.5 Public Key Infrastructure

3. **User Authentication Protocols** **6Hrs.**

   3.1 Remote User Authentication Principles
   3.2 Remote User Authentication Using Symmetric Encryption
   3.3 Kerberos
   3.4 Remote User Authentication Using Asymmetric Encryption
   3.5 Federated Identity Management

4. **Transport-Level Security** **6Hrs.**

   4.1 Web Security Issues
   4.2 Secure Sockets Layer (SSL)
   4.3 Transport Layer Security (TLS)
   4.4 HTTPS

4.5 Secure Shell (SSH)

5. Wireless Network Security **7Hrs.**

5.1 IEEE 802.11 Wireless LAN Overview
5.2 IEEE 802.11i Wireless LAN Security
5.3 Wireless Application Protocol Overview
5.4 Wireless Transport Layer Security
5.5 WAP End-to-End Security

6. Electronic Mail Security **3Hrs.**

6.1 Pretty Good Privacy (PGP)
6.2 S/MIME
6.3 DomainKeys Identified Mail (DKIM)

7. IP Security **8Hrs.**

7.1 IP Security Overview
7.2 IP Security Policy
7.3 Encapsulating Security Payload
7.4 Combining Security Associations
7.5 Internet Key Exchange
7.6 Cryptographic Suites

8. Cyber Security Overview **4Hrs.**

Laboratory Work: All the features covered in this syllabus.

Reference Book:

Cryptography and Network Security: Principles and Practice, 5/E,**William Stallings,** ISBN-10: 0136097049, Prentice Hall, India Limited