Network Security (CSC -455)
Tribhuvan University
Institute of Science and Technology
Bachelor of Science in Computer Science and Information Technology
Soch College of Information Technology

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 practices 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 Certificates
2.5 Public Key Infrastructures

3. User Authentication Protocols ---------- 6 hrs.
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 ---------- 6 hrs.
4.1 Web Security Issues
4.2 Secure Socket Layer(SSL)
4.3 Transport Layer Security (TLS)

4.4 HTTS
4.5 Secure Shell(SSH)

5. Wireless Network Security ---------- 7 hrs.
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 ---------- 3 hrs.
6.1 Pretty Good Privacy(PGP)
6.2 S/MIME
6.3 Domain Keys Identified Mail (DKIM)

7. IP Security ---------- 8 hrs.
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 ----------4 hrs.

Laboratory Work: All the features covered in the syllabus

Reference Book:
Cryptography and Network Security: Principles and Practice, 5/E, William Stallings, ISBN – 10:0136097043, Prentice Hall, India Limited