



INFORMATION TECHNOLOGY
ENGINEERING

IT ENGINEERING SEM V

COMPUTER NETWORK

SECURITY

Programming & development

Course Curriculum



COMPUTER NETWORK SECURITY SEM V

Module 1 : Introduction to Network Security & Cryptography

- Computer security and Network Security(Definition)
- CIA
- Services
- Mechanisms and attacks
- The OSI security architecture
- Network security model
- Classical Encryption techniques
 - mono-alphabetic and poly-alphabetic substitution techniques
 - Vigenere cipher
 - playfair cipher
- transposition techniques
 - keyed and keyless transposition ciphers
- Introduction to steganography



Module 2: Cryptography: Key management, distribution and user authentication

- Block cipher modes of operation
- Data Encryption Standard
- Advanced Encryption Standard (AES)
- RC5 algorithm
- Public key cryptography
 - RSA algorithm
- Hashing Techniques
 - SHA256
 - SHA-512
 - HMAC and CMAC
- Digital Signature Schemes
 - RSA
 - DSS
- Remote user Authentication Protocols
- Kerberos
- Digital Certificate
 - X.509

- PKI

Module 3: Malicious Software

- SPAM
- Trojan horse
- Viruses
- Worms
- System Corruption
- Attack Agents
- Information Theft
- Trapdoor
- Keyloggers
- Phishing
- Backdoors
- Rootkits
- Denial of Service Attacks
- Zombie



Module 4: IP Security, Transport level security and Email Security

- IP level Security
 - Introduction to IPSec
 - IPSec Architecture
 - Protection Mechanism (AH and ESP)
- Transport level security
 - VPN
- Need Web Security considerations
- Secure Sockets Layer (SSL)Architecture
- Transport Layer Security (TLS)
- HTTPS
- Secure Shell (SSH) Protocol Stack
- Email Security
 - Secure Email S/MIME Screen reader support enabled

Module 5: Network Management Security and Network Access Control



- Network Management Security
 - SNMPv3
 - NAC
 - Principle elements of NAC
 - Principle NAC enforcement methods
 - How to implement NAC Solutions
 - Use cases for network access control

Module 6: System Security

- IDS
- Firewall Design Principles
- Characteristics of Firewalls
- Types of Firewalls

