



**BONAM VENKATA CHALAMAYYA INSTITUTE OF
TECHNOLOGY AND SCIENCE (A) :: BATLAPALEM, Andhra
Pradesh, India**

**MCA Course Structure & Syllabus
(Applicable for batches admitted from 2025-2026)**

MCA II Semester

Course code :25MC2T07

L	T	P	C
3	0	0	3

NETWORK SECURITY AND CYBER SECURITY

Course Objectives:

- To learn various cryptographic algorithms including secret key cryptography, hashes and message digests, public key algorithms,
- To Familiar in design issues and working principles of various authentication protocols and various secure communication standards
- To understand the cybercrime fundamentals and preventive steps

UNIT I:

Basic Principles: Security Goals, Cryptographic Attacks, Services and Mechanisms, Mathematics of Cryptography. Symmetric Encryption: Mathematics of Symmetric Key Cryptography, Introduction to Modern Symmetric Key Ciphers, Data Encryption Standard, Advanced Encryption Standard.

UNIT II:

Asymmetric Encryption: Mathematics of Asymmetric Key Cryptography-Primes, primality Testing, Factorization, Asymmetric Key Cryptography-RSA Cryptosystem, Rabin Cryptosystem, ElGamal Cryptosystem, Elliptic Curve Cryptosystem Cryptographic Hash Functions: Applications of Cryptographic Hash Functions, Two Simple Hash Functions Requirements and Security Hash Functions Based on Cipher Block Chaining, Secure Hash Algorithm (SHA), SHA-3

UNIT III:

Digital Signatures: Elgamal Digital Signature Scheme, Schnorr Digital Signature, NIST Digital Signature Algorithm Electronic Mail Security: Internet Mail Architecture, Email Formats, Email Threats and Comprehensive Email Security, S/MIME. IP Security: IP Security Policy, Encapsulating Security Payload, Combining Security Associations Internet Key Exchange

UNIT III:

Digital Signatures: Elgamal Digital Signature Scheme, Schnorr Digital Signature, NIST Digital Signature Algorithm Electronic Mail Security: Internet Mail Architecture, Email Formats, Email Threats and Comprehensive Email Security, S/MIME. IP Security: IP Security Policy, Encapsulating Security Payload, Combining Security Associations Internet Key Exchange

Unit V:

Proxy Servers and Anonymizers, Phishing, Password Cracking, Keyloggers and Spywares, Virus and Worms, Trojan Horses and Backdoors, Steganography, Sniffers, Spoofing, Session Hijacking Buffer overflow, DoS and DDoS Attacks, SQL Injection, Buffer Overflow, Attacks on Wireless Networks, Identify theft, FootPrinting and Social Engineering, Port Scanning, EMailInvestigation, E-Mail Tracking, IP Tracking, EMail Recovery, Password Cracking

University Nominee Dr.Suneetha Ehuri		Alumni Member Mr.HariSuresh Polisetti	
SubjectExpert:1 Dr. B Kezia Rani		Chairman Mr. AVS M Ganesh	
SubjectExpert:2 Dr.SuneelKumarDuvvuri		Member Mr. G L N V S Kumar	
Representative From Industry Mr.SaiKrishna Narima		Member	



**BONAM VENKATA CHALAMAYYA INSTITUTE OF
TECHNOLOGY AND SCIENCE (A) :: BATLAPALEM, Andhra
Pradesh, India**

**MCA Course Structure & Syllabus
(Applicable for batches admitted from 2025-2026)**

Text Books:

1. Cryptography and Network Security, 3rd Edition Behrouz A Forouzan, Deb deep Mukhopadhyay, McGraw Hill, 2015
2. Sunit Belapure Nina Godbole "Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", WILEY, 2011.,

Reference Books: 1. Network Security and Cryptography, First Edition, Bernard Meneges, Cengage Learning, 2018

2. Cryptography and Network Security, William Stallings, Global Edition, 7e Pearson, 2017

Web Resources:

1. <https://archive.nptel.ac.in/courses/106/105/106105162/>
2. <https://ebooks.inflibnet.ac.in/csp11/chapter/introduction-to-networksecurity/>
3. <https://www.fortinet.com/resources/cyberglossary/what-iscryptography>
4. <https://ischoolonline.berkeley.edu/cybersecurity/curriculum/cryptograp hy/>
5. <https://www.mitel.com/articles/web-communication-cryptographyand-network-security>
6. <https://www.nist.gov/cybersecurity> 7. <https://www.codecademy.com/learn/introduction-to-cybersecurity>

University Nominee Dr. Suneetha Eluri		Alumni Member Mr. Hari Suresh Polisetti	
Subject Expert:1 Dr. B Kezia Rani		Chairman Mr. AVS M Ganesh	
Subject Expert:2 Dr. Suneel Kumar Duvvuri		Member Mr. G L N V S Kumar	
Representative From Industry Mr. Sai Krishna Narima		Member	