SWARNANDHRA

COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

SEETHARAMPURAM, NARSAPUR-534280, WG- DT, AP

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

TEACHING PLAN

Course Code	Course Title	Year/Sem	Branch	Contact Hrs/Week	Academic Year
24MC2T02	Network Security and Cyber Security	I/II	MCA	6	2025-2026

COURSE OUTCOMES (CO): Students are able to

- 1. Explain basic cryptography principles, including security goals, attacks, and symmetric Encryption techniques like DES and AES. (K2)
- 2. Apply asymmetric encryption methods and compare cryptographic has functions such as SHA and SHA-3. (K3)
- Analyze digital signature schemes and evaluates security measures for email and IP security.
 (K4)
- 4. Identify and classify cybercrimes and understand the roles and motivations of cybercriminals. (K1)
- 5. Evaluate advanced cyber threats and propose security measures to counter them. (K5)

Unit	Outcome/ Blooms Level		TOPIC/ACTIVITY	Text Books	Contact HOURS	Delivery Method
17.30	Explain basic cryptography principles, including security goals, attacks, and symmetric Encryption techniques like DES and AES (K2)					
		1.1	Basic Principles: Security Goals, Cryptographic Attacks	Т1	d+ 1	Chalk & Board & Demonstration of
		1.2	Services and Mechanisms	T1	1	
I		1,3	Mathematics of Cryptography	T1	2	Cryptographic Algorithms

Apply asymmetric ncryption methods and ompare cryptographic as functions such as SHA and SHA-3. (K3)	1.5 1.6 1.7 1.8 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8	Mathematics of Symmetric Key Cryptography Introduction to Modern Symmetric Key Ciphers Data Encryption Standard Advanced Encryption Standard UNIT-II Asymmetric Encrypti Mathematics of Asymmetric Key Cryptography Primes, Primality Testing, Factorization Asymmetric Key Cryptography RSA Cryptosystem ElGamal Cryptosystem Elliptic Curve Cryptosystem Cryptographic Hash Functions:	T1	1 2 1 1 1 1 1 1 1	- & Demonstr
ncryption methods and ompare cryptographic as functions such as	1.7 1.8 2.1 2.2 2.3 2.4 2.5 2.6 2.7	Symmetric Key Ciphers Data Encryption Standard Advanced Encryption Standard UNIT-II Asymmetric Encrypti Mathematics of Asymmetric Key Cryptography Primes, Primality Testing, Factorization Asymmetric Key Cryptography RSA Cryptosystem Rabin Cryptosystem ElGamal Cryptosystem Elliptic Curve Cryptosystem	T1 T1 T1 T1 T1 T1 T1	1 2 1 1 1 1	Chalk & 1 & Demonstr of Cryptogra
ncryption methods and ompare cryptographic as functions such as	2.1 2.2 2.3 2.4 2.5 2.6 2.7	Advanced Encryption Standard UNIT-II Asymmetric Encrypti Mathematics of Asymmetric Key Cryptography Primes, Primality Testing, Factorization Asymmetric Key Cryptography RSA Cryptosystem Rabin Cryptosystem ElGamal Cryptosystem Elliptic Curve Cryptosystem	T1 T1 T1 T1 T1 T1	1 2 1 1 1	Chalk & 1 & Demonstr of Cryptogra
ncryption methods and ompare cryptographic as functions such as	2.1 2.2 2.3 2.4 2.5 2.6 2.7	Asymmetric Encrypti Mathematics of Asymmetric Key Cryptography Primes, Primality Testing, Factorization Asymmetric Key Cryptography RSA Cryptosystem Rabin Cryptosystem ElGamal Cryptosystem Elliptic Curve Cryptosystem	T1 T1 T1 T1 T1 T1	2 1 1 1 1	Demonstr of Cryptogra
ncryption methods and ompare cryptographic as functions such as	2.2 2.3 2.4 2.5 2.6 2.7	Mathematics of Asymmetric Key Cryptography Primes, Primality Testing, Factorization Asymmetric Key Cryptography RSA Cryptosystem Rabin Cryptosystem ElGamal Cryptosystem Elliptic Curve Cryptosystem	T1 T1 T1 T1 T1 T1	2 1 1 1 1	Demonstr of Cryptogra
ncryption methods and ompare cryptographic as functions such as	2.2 2.3 2.4 2.5 2.6 2.7	Cryptography Primes, Primality Testing, Factorization Asymmetric Key Cryptography RSA Cryptosystem Rabin Cryptosystem ElGamal Cryptosystem Elliptic Curve Cryptosystem	T1 T1 T1 T1 T1	2 1 1 1 1	Demonstr of Cryptogra
ncryption methods and ompare cryptographic as functions such as	2.3 2.4 2.5 2.6 2.7	Primes, Primality Testing, Factorization Asymmetric Key Cryptography RSA Cryptosystem Rabin Cryptosystem ElGamal Cryptosystem Elliptic Curve Cryptosystem	T1 T1 T1 T1	1 1 1 1	of Cryptogra
ncryption methods and ompare cryptographic as functions such as	2.4 2.5 2.6 2.7	RSA Cryptosystem Rabin Cryptosystem ElGamal Cryptosystem Elliptic Curve Cryptosystem	T1 T1 T1	1 1 1	argorium
ncryption methods and ompare cryptographic as functions such as	2.5 2.6 2.7	Rabin Cryptosystem ElGamal Cryptosystem Elliptic Curve Cryptosystem	T1 T1	1 1	
ncryption methods and ompare cryptographic as functions such as	2.5 2.6 2.7	ElGamal Cryptosystem Elliptic Curve Cryptosystem	T1	1	
ompare cryptographic as functions such as	2.6	ElGamal Cryptosystem Elliptic Curve Cryptosystem		-	
as functions such as			T1		
	2.8	Cryptographic Hash Functions:		1	THE R
		Applications of Cryptographic Hash Functions	Т1	2	
	2.9	Two Simple Hash Functions	T1	1	-
	2.10	Requirements and Security	T1	1	
	2.9	Hash Functions Based on Cipher Block Chaining	Т1	1	
	2.10	Secure Hash Algorithm (SHA)	T1	1430	
	2.11	SHA-3	T1	1	
		UNIT-III	- (SA2)		A COLUMN
han a haire of	2.1	Digital Signatures	5,50		
	100000000000000000000000000000000000000	Schnorr Digital Signature Scheme	T1	1	
Analyze digital	3.3	NIST Digital Signature Algorithm		1	Chalk & Board
signature schemes and		MID EXAM-1	11	2	&
evaluates security	3.4	Mail Architecture	T1	1	Demonstration of
measures for email			T1	1	Cryptographic
and IP security. (K4)	3.6	Email Security	Tl	1	Algorithms
	3.7	S/MIME. IP Security: IP Security Policy	T1	2	
	3.8	Encapsulating Security Payload	T1	1	
	3.9	Combining Security Associations	T1	1	2 (C)
	3.10	Internet Key Exchange	Tl	1	
	signature schemes and	Analyze digital 3.2 3.3 signature schemes and evaluates security measures for email 3.5 and IP security. (K4) 3.6 3.7 3.8	Analyze digital Signature schemes and evaluates security measures for email and IP security. (K4) 3.1 ElGamal Digital Signature Scheme 3.2 Schnorr Digital Signature MID EXAM-1 Electronic Mail Security: Internet Mail Architecture Mail Architecture 3.5 Email Formats Email Threats and Comprehensive Email Security S/MIME. IP Security: IP Security Policy 3.8 Encapsulating Security Payload 3.9 Combining Security Associations	UNIT-III Digital Signatures 3.1 ElGamal Digital Signature Scheme T1 3.2 Schnorr Digital Signature T1 3.3 NIST Digital Signature Algorithm T1 signature schemes and evaluates security measures for email and IP security. (K4) 3.4 Electronic Mail Security: Internet Mail Architecture 3.5 Email Formats T1 3.6 Email Threats and Comprehensive Email Security 3.7 S/MIME. IP Security: IP Security 3.8 Encapsulating Security Payload 3.9 Combining Security Associations T1	UNIT-III Digital Signatures 3.1 ElGamal Digital Signature Scheme T1 1 3.2 Schnorr Digital Signature T1 1 Analyze digital signature schemes and evaluates security measures for email and IP security. (K4) 3.4 Electronic Mail Security: Internet Mail Architecture T1 1 3.5 Email Formats T1 1 3.6 Email Threats and Comprehensive Email Security S/MIME. IP Security: IP Security 3.7 S/MIME. IP Security: IP Security 3.8 Encapsulating Security Payload T1 1 3.9 Combining Security Associations T1 1 3.10 Internet Key Exchange

			UNIT-IV			
	in the		Introduction to Cybercrime	1 J J J J J S S	2.173	Chalk
ΙV		4.1	Introduction to Cybercrime: Introduction	T2	1	&
	71 (C - 1 - 1 : C -	4.2	Cybercrime: Definition and Origins of the Word	T2	1	Board
	Identify and classify cybercrimes and	4.3	Cybercrime and Information Security	T2	1	PPT with
-	understand the roles and	4.4	Cybercriminals	T2	1-	Video
	motivations of	4.5	Classifications of Cybercrime	T2	2	Demonstra
cybercriminals(K1)	4.6	Cyber Stalking	T2	1	tion	
		4.7	Cyber Café and Cybercrimes	T2	1	
		4.8	Botnets	T2	1	
		4.9	Attack Vector	T2	1	
	lance.	4.10	Proliferation of Mobile and Wireless Devices	T2	2	
		4.11	Security Challenges Posed by Mobile Devices	T2	1	
	The second second	4.12	Attacks on Mobile/Cell Phones.	T2	1	
		UNIT-V Proxy Servers and Anonymizers				3
						1
			Proxy Servers and Anonymize	rs		
		5.1		T2	1	-
		5.1	Proxy Servers and Anonymizers		1	
		5.2	Proxy Servers and Anonymizers Phishing, Password Cracking	T2		
		5.2 5.3	Proxy Servers and Anonymizers Phishing, Password Cracking Keyloggers and Spywares	T2 T2	-1 %	
		5.2 5.3 5.4	Proxy Servers and Anonymizers Phishing, Password Cracking Keyloggers and Spywares Viruses and Worms	T2 T2 T2	1	Chalk
	Evaluate advanced cyber	5.2 5.3 5.4 5.5	Proxy Servers and Anonymizers Phishing, Password Cracking Keyloggers and Spywares Viruses and Worms Trojan Horses and Backdoors	T2 T2 T2 T2	1 1 1	Chalk
V	Evaluate advanced cyber threats and propose	5.2 5.3 5.4	Proxy Servers and Anonymizers Phishing, Password Cracking Keyloggers and Spywares Viruses and Worms	T2 T2 T2 T2 T2 T2	1 1 1	&
v	threats and propose security measures to	5.2 5.3 5.4 5.5 5.6	Proxy Servers and Anonymizers Phishing, Password Cracking Keyloggers and Spywares Viruses and Worms Trojan Horses and Backdoors Steganography, Sniffers Spoofing, Session Hijacking Buffer Overflow, DoS and DDoS	T2 T2 T2 T2 T2 T2 T2	1 1 1 1 2	
v	threats and propose	5.2 5.3 5.4 5.5 5.6 5.7 5.8	Proxy Servers and Anonymizers Phishing, Password Cracking Keyloggers and Spywares Viruses and Worms Trojan Horses and Backdoors Steganography, Sniffers Spoofing, Session Hijacking Buffer Overflow, DoS and DDoS Attacks	T2 T2 T2 T2 T2 T2 T2 T2 T2	1 1 1 1 2 1	& Board PPT with
v	threats and propose security measures to	5.2 5.3 5.4 5.5 5.6 5.7 5.8	Proxy Servers and Anonymizers Phishing, Password Cracking Keyloggers and Spywares Viruses and Worms Trojan Horses and Backdoors Steganography, Sniffers Spoofing, Session Hijacking Buffer Overflow, DoS and DDoS	T2 T2 T2 T2 T2 T2 T2 T2 T2 T2	1 1 1 1 2 1	& Board PPT with Video
V	threats and propose security measures to	5.2 5.3 5.4 5.5 5.6 5.7 5.8	Proxy Servers and Anonymizers Phishing, Password Cracking Keyloggers and Spywares Viruses 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 Identity theft, Foot printing and	T2 T2 T2 T2 T2 T2 T2 T2 T2 T2	1 1 1 2 1 1	& Board PPT with
v	threats and propose security measures to	5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10	Proxy Servers and Anonymizers Phishing, Password Cracking Keyloggers and Spywares Viruses 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 Identity theft, Foot printing and Social Engineering	T2 T	1 1 1 2 1 1 1	& Board PPT with Video Demonstr
V	threats and propose security measures to	5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 5.12	Proxy Servers and Anonymizers Phishing, Password Cracking Keyloggers and Spywares Viruses 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 Identity theft, Foot printing and Social Engineering Port Scanning, Email Investigation	T2 T	1 1 1 2 1 1 1 1	& Board PPT with Video Demonstr
V	threats and propose security measures to	5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10	Proxy Servers and Anonymizers Phishing, Password Cracking Keyloggers and Spywares Viruses 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 Identity theft, Foot printing and Social Engineering	T2 T	1 1 1 2 1 1 1 1 1 2	& Board PPT with Video Demonstr

Course Beyond Syllabus	Impact of IOT on Cyber Security.	Web Resources	1	
-	MID EXAM 2	1,7%	3	
	TOTAL CLASSES	69	19	

Recommended Text Books for Reading:

1. Cryptography and Network Security, 3rd Edition, Behrouz A. Forouzan, Deb deep Mukhopadhyay, McGraw Hill, 2015.

2. SunitBelapure, Nina Godbole "Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives,", WILEY, 2011

Reference Text Books:

- 1. Network Security and Cryptography, First Edition, Bernard Menezes, Cengage Learning,
- 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-network-security/
- 3. https://www.fortinet.com/resources/cyberglossary/what-is-cryptography
- 4. https://ischoolonline.berkeley.edu/cybersecurity/curriculum/cryptography/
- 5. https://www.mitel.com/articles/web-communication-cryptography-and-network security
- 6. https://www.nist.gov/cybersecurity

7. https://www.codecademy.com/learn/introduction-to-cybersecurity

Faculty

Head of the Department