

Branch Name:	COMPUTER ENGINEERING (Software Engineering)
Program Code:	ET203
Course Title:	Cyber Security
Course Code:	2ET2030205T
Pre-requisite Course:	Familiarity with operating systems and programming languages security protocols and standards

Course Objectives: After successful completion of the course, student will be able to

- The information and data are immense and need to be secured. The cyber crimes have increased as attackers see it as gaining big rewards. There is a need to examine the cyber attack patterns and provide security measures for them and also need to learn the cyber laws formed to effectively act upon cyber crimes.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
3	3	-	-	3	24	60	16	40	-	-	-	-	100

Course Contents:

Unit No	Topics	Total Hours	Weightage (%)
1	Systems Vulnerability Scanning: Overview of vulnerability scanning, Open Port / Service Identification, Banner / Version Check, Traffic Probe, Vulnerability Probe, Vulnerability Examples, OpenVAS, Metasploit. Networks Vulnerability Scanning - Netcat, Socat, understanding Port and Services tools - Datapipe, Fpipe, WinRelay, Network Reconnaissance – Nap, THC-Amap and System tools. Network Sniffers and Injection tools – Tcpdump and Windump, Wireshark, Ettercap, Hping Kismet	08	25
2	Network Defense tools Firewalls and Packet Filters: Firewall Basics, Packet Filter Vs Firewall, Packet Characteristic to Filter, Stateless Vs Stateful Firewalls, Network Address Translation (NAT) and Port Forwarding, Snort: Introduction Detection System	08	20
3	Web Application Tools Scanning for web vulnerabilities tools: Nikto, W3af, HTTP utilities - Curl, OpenSSL and Stunnel, Application Inspection tools – Zed Attack Proxy, Sqlmap. DVWA, Webgoat, Password Cracking and Brute-Force Tools – John the Ripper, L0htcrack, Pwdump, HTC-Hydra	07	20
4	Introduction to Cyber Crime and law Cyber Crimes: Types of Cybercrime, Hacking, Attack vectors, Cyberspace and Criminal Behaviour, Clarification of Terms, Traditional Problems Associated with Computer Crime, Introduction to Incident Response, Digital Forensics, Realms of the Cyber world, Recognizing and Defining Computer Crime, Contemporary Crimes, Contaminants and Destruction of Data, Indian IT ACT 2000.	09	20
5	Introduction to Cyber Crime Investigation Keyloggers and Spyware, Virus and Worms, Trojan and backdoors, Steganography, DOS and DDOS attack, SQL injection, Buffer	07	15

Text Books:

1. William Stallings, High Speed Networks and Internet, Pearson Education, Fourth Edition, 2005.
2. Behrouz A. Forouzan, Data Communications and Networking, 4th edition, Tata McGraw-Hill, 2005.
3. Warland&PravinVaraiya, High Performance Communication Networks, Jean Harcourt Asia Pvt. Ltd., II Edition, 2001.

Reference Books:

1. Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Nina Godbole and Sunit Belpure, Publication Wiley
2. Cyber Security and Cyber Laws Paperback – 2018 by Alfred Basta, Nadine Basta , Mary Brown , Ravinder Kumar, publication Cengage
3. Anti-Hacker Tool Kit (Indian Edition) by Mike Shema, Publication Mc Graw Hill.
4. Cyber security and laws – An Introduction, Madhumita Chaterjee, Sangita Chaudhary, Gaurav Sharma, Staredu Solutions
5.
 - ☐ **List of Open-Source Software/learning website:**
 - ☐ <http://www.wireshark.org/>
 - ☐ https://mec.edu.in/mvlc/lecture_handouts/l_cse/lh_hsn.pdf

Course Learning Outcomes (CLO):

Course Outcomes	Description	Bloom's Taxonomy Level
COL1	Describe system and web vulnerability.	Understanding (2) Applying (3)
COL2	Evaluate network defence tools.	Applying (3)
COL3	Understand the cyber laws	Applying (3)
COL4	Investigate a cybercrime, prepare report and apply laws for the case	Applying (3)

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	M		M											
CLO2	H	M			M							L				
CLO3	H	M	M		M											
CLO4	M	M	M		M							L				

H: High, M: Medium, L: Low