



GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Integrated MSc, 5th Semester
Branch: Computer Science
Subject Name: Fundamentals of Cyber Security
Subject Code: 1350304

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE(E)	PA (M)	PA (I)	ESE (V)	
4	0	2	5	70	30	20	30	150

Content:

Sr. No.	Content	Teaching Hours	Module 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 – Nmap, THC-Amap and System tools. Network Sniffers and Injection tools – Tcpcat and Windump, Wireshark, Ettercap, Hping Kismet.	8	25%
2.	Network Defense tools Firewalls and Packet Filters: Firewall Basics, Packet Filter Vs Firewall, How a Firewall Protects a Network, Packet Characteristic to Filter, Stateless Vs Stateful Firewalls, Network Address Translation (NAT) and Port Forwarding, the basic of Virtual Private Networks, Linux Firewall, Windows Firewall, Snort: Introduction Detection System.	6	25%
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, LOhtcrack, Pwdump, HTC-HydraQueue 3.5 Application of queue 3.6 Difference circular queue and simple queue.	6	25%
4.	Introduction to Cyber Crime and law: Cyber Crimes, Types of Cybercrime, Hacking, Attack vectors, Cyberspace and Criminal Behavior, 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.	3	10%



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5.	Introduction to Cyber Crime Investigation: Firewalls and Packet Filters, password Cracking, Keyloggers and Spyware, Virus and Worms, Trojan and backdoors, Steganography, DOS and DDOS attack, SQL injection, Buffer Overflow, Attack on wireless Networks.	5	15%
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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.

Course Outcomes:

Sr. No.	CO Statement
CO-1	Describe system and web vulnerability.
CO-2	Evaluate network defence tools.
CO-3	Understand the cyber laws
CO-4	Investigate a cybercrime, prepare report and apply laws for the case.
CO-5	Describe the Cyberattacks on Networks or system.