

1.	Title of the course	Cyber Security
2.	Course number	CS527L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To CS5232/15
6.	To be offered by	Department of Computer Science and Engineering
7.	To take effect from	January 2022
8.	Prerequisite	Nil
9.	Course Objective(s): To understand the basic components of Cyber Security and its related terminologies, different types of cyber attacks, and different solutions and techniques to handle the attacks. To understand the attacks, solutions and prevention methods at different layers in distributed systems and networks. To gain knowledge of the processes involved in preventing attacks including secure software development.	
10.	Course Content: Basics: terms, need for cyber security, components of cyber security; Types of cyber security: network, application, web, host, infrastructure, device, hardware; Types of attacks: malware, phishing, SQL injection, cross site scripting, social engineering, ransomware, DDoS, man-in-the-middle, password attacks, interception attacks, hacks; CIA requirements: confidentiality, integrity, availability; Encryption and solutions: basics of cryptography, ciphers, symmetric and asymmetric cryptography, public key cryptosystems, digital signatures, certificates, SSL, firewalls, Physical Unclonable Functions (PUF); Processes: secure SDLC, threat modeling, risk assessment, vulnerability assessment, penetration testing, OWASP recommendations; Awareness: cyber safety, digital forensics best practices, software processes.	
11.	Textbook(s): 1. Anderson R J, <i>Security Engineering: A guide to building dependable distributed systems</i> , 2nd Edition, Wiley (2008). 2. Douglas R S, <i>Cryptography: Theory and Practice</i> , 3rd Edition, CRC Press, Taylor and Francis Group (2014).	
12.	Reference(s): 1. Allison C, <i>The Cybersecurity Playbook: How Every Leader and Employee Can Contribute to a Culture of Security</i> , 1st Edition, Wiley (2019). 2. Belapurkar A et al., <i>Distributed Systems Security: Issues, Processes and Solutions</i> , 1st Edition, Wiley (2009). 3. Joseph M K, <i>Guide to Computer Network Security</i> , 4th Edition, Springer (2017).	