GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Bachelor of Technology	Branch/Spec	Computer Science & Engineering (CS)
Semester	VI	Version	1.0.0.0
Effective from Academic Year	2021-22	Effective for the batch Admitted in	June 2019
Subject code	2CSE603	Subject Name	Network Security

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50

Pre-requisites:

Basics of communication system, Computer Networks

Learning Outcome:

After learning the course, the students should be able to

- Understand the network security and learn different network security devices.
- Analyze different types of security attacks on network and their countermeasures
- Analyze and design the organization network on the basis of the security constraints.
- Apply vulnerability assessment and penetration testing techniques

Theory syllabus

Unit	Content	Hrs
1	**Basics of Network Security:** Basics of threats , attacks, secure routing.	**3**
2	**Security in Virtual Private Networks** VPN and its types –Tunneling Protocols – Tunnel and Transport Mode –Authentication Header Encapsulation Security Payload (ESP), Implementation of VPNs., IPsec, IPSec architecture and components, PPTP VPN, L2TP VPN, SSL VPN	**8**
3	**IDS and IPS,Firewall** IDS for networks, Intrusion detection versus Intrusion Protection, IPS deployment and advantages, Firewall classification, Firewall deployment, modern NIDSs, Detection versus prevention, architecture matters	**11**
4	**Wireless Networks Security and Bluetooth** Authentication, encryption, WEP, WPA, Wireless reconnaissance, Actively attacking wireless networks, Bluetooth basics, architecture and working of Bluetooth, Security in Bluetooth	**8**
5	**Defense for Securing wireless Networks** Phases for wireless deployment, Design principles for secure wireless networks	**8**
6	**Email Security** Simple Mail Transfer Protocol, POP and IMAP, MIME, General Email Countermeasures	**7**

Suggested Practical List

Practical based on network attacks, VPN, wireless networks, sniffing tools, logs analysis

Text Books

1	Network Security: Current Status and Future Directions Christos Douligeris, Dimitrios N. Serpanos by John Wiley & Sons

2	Wireless Network Security A Beginner's Guide Tyler Wrightson by McGraw Hill Professional
3	Network Security, Private communication in public world. PHI - Kaufman, C., Perlman, R., & Speciner, M
4	Introduction to Network Security By Douglas Jacobson
Reference Books	
1	Cryptography and Network Security: Principles and Practice Prentice Hall - Stallings, W.
2	Network Security. Wiley - Perez, Andre.
3	Network Attacks and Exploitation: A Framework. Wiley - Monte, M.
4	Computer Networking- A Top-Down approach, Kurose and Ross, Pearson
Mooc Course	
1) Cryptography and Network Security- https://swayam.gov.in/nd1_noc20_cs21/preview 2) Fundamentals of Network Security - https://www.udemy.com/course/fundamentals-of-network-security/ 3) Fundamentals of Network Security - https://www.coursera.org/specializations/computer-network-security	

Course Outcomes:

COs	Description
CO1	Understand the network security and learn different network security devices.
CO2	Analyze different types of security attacks on network and their countermeasures
CO3	Analyze and design the organization network on the basis of the security constraints.
CO4	Apply vulnerability assessment and penetration testing techniques

Mapping of CO and PO:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	1	2	2	3	2	1	2	2
CO2	1	2	2	2	2	1	3	1	2	2	2	1
CO3	3	2	2	2	3	3	3	2	2	3	2	2
CO4	3	2	2	2	3	3	3	2	2	3	1	2