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Department of Electronics & Communication Engineering

COURSE MODULE FOR THE AY- 2025-26 ODD sem
Course Syllabi with CO's

Department: **Electronics and Communication Engineering**							
Course Code		**Core/Elective**	**Prerequisite**	**Contact Hours**			**Total Hrs/ Sessions**
				L	**T**	**P**	
BEC714B	**Computer and Network Security**	Elective	Computer Basics & Computer Networks	3	-		40
Objectives	Course objectives: **Preparation:** To prepare students with fundamental knowledge/ overview in the field of Network Security with knowledge of security mechanisms and services, Vulnerabilities in the host machines. **Core Competence:** To equip students with a basic foundation on computer as well as network security by delivering the basics of malicious software, intrusion detection, vulnerability Analysis, auditing as well as securities related to network, system, user and programs						

Topics to be Covered as per the VTU Syllabus

Module-1

Attacks on Computers and Computer Security: Need for Security, Security Approaches, Principles of Security Types of Attacks. (Text2: Chapter1)
Security Mechanisms, Services and Attacks, A model for Network security **(Text1: Chapter1: 3, 4, 5, 6)**

Module-2

Malicious Logic: Introduction, Trojan Horses, Computer Viruses, Computer Worms, Other Forms of Malicious Logic, Defenses (Text 3: Chapter 12)
Vulnerability Analysis: Introduction, Penetration Studies, Vulnerability Classification, Frameworks
(Text 3: Chapter 13)

Module-3

Auditing: Definitions, Anatomy of an Auditing System, Designing an Auditing System, A Posterior Design, Auditing Mechanisms, Examples, Audit Browsing (Text 3: Chapter 14)
Intrusion Detection: Principles, Basic Intrusion Detection, Models, Architecture, Organization of Intrusion Detection Systems, Intrusion Response (Text 3: Chapter 15)

Module-4

Network Security: Introduction, Policy Development, Network Organization, Availability and Network Flooding, Anticipating Attacks (Text 3: Chapter 16)
System Security: Introduction, Policy, Networks, Users, Authentication, Processes, Files, Retrospective
(Text 3: Chapter 17)

Module-5

User Security: Policy, Access, Files and Devices, Processes, Electronic Communications
(Text 3: Chapter 18)
Program Security: Introduction, Requirements and Policy, Design, Refinement and Implementations
(Text 3: Chapter 19: Section 1, 2, 3, 4)

List of Text Books
1. William Stallings, "Cryptography and Network Security Principles and Practice", Pearson Education Inc., 6th Edition, 2014, ISBN: 978-93-325-1877-3
2. Atul Kahate, "Cryptography and Network Security", TMH, 2003.
3. Matt Bishop, Sathyanarayana S Venkatramanayya, "Introduction to Computer Security", Pearson Education, 2006, ISBN 81-7758-425-1

List of Reference Books
1. Cryptography and Network Security, Behrouz A Forouzan, TMH, 2007.

List of URLs, Text Books, Notes, Multimedia Content, etc
https://nptel.ac.in/courses/106105031
https://nptel.ac.in/courses/106101180
https://www.youtube.com/playlist?list=PLoROMvodv4rPLKxIpqhjhPgdQy7imNkDn

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning :
1. Experiential Learning by using free and open-source software's SCILAB or OCTAVE or Python

Course Outcomes	At the end of the course the student will be able to: 1. Explain the various types of attacks on computer and network security from malicious logic and intruders. 2. Explain how to analyze the various vulnerabilities in the system which can compromise the security. 3. Explain how auditing is essential to detect intrusion or suspicious activities in the system. 4. Explain the process involved to provide security with respect to network, system, user and program..

Internal Assessment Marks: 25 marks for the theory component are split into 15 marks for two Internal Assessment Tests (Two Tests, each of 15 Marks with 01-hour duration, are to be conducted) and 10 marks for other assessment methods mentioned in 22OB4.2.Scaled-down marks of the sum of two tests and other assessment methods will be CIE marks for the theory component of IPCC (that is for 25 marks).

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Subject Code:	IPCC BEC714B	Title: Computer & Network security												
List of Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO-1	3	2	–	–	–	–	–	–	–	–	–	2	3	2
CO-2	3	3	–	2	–	–	–	–	–	–	–	2	3	2
CO-3	3	–	2	2	–	2	–	–	–	–	–	2	–	
CO-4	3	2	2	–	3	2	–	–	–	–	–	2	3	3

Note: 3 = Strong Contribution   2= Average Contribution   1 = Weak Contribution   -= No Contribution