Mansoura University

Faculty of Computers and Information Sciences

Computer Security – IT424P – 2018/2019

University: Mansoura University **Faculty**: Computer and Information Sciences

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Program on which the course is given: General

Department offering the course: Department of Information Technology

Academic year/ Level: Fourth Year

Labs Contents

No	Labs Content
1	Introduction to computer security • security goals •attacks and defense • basic concepts • threats • vulnerabilities • confidentiality •privacy • integrity • availability • Encryption and cryptography • basic cryptographic codes • ciphers and codes
2	classical encryption algorithms [Caesar cipher + Row transposition cipher]
3	classical encryption algorithms [Playfair cipher + affine cipher]
4	classical encryption algorithms [full vigenere cipher + auto-key vigenere cipher]
5	symmetric crypto primitives • asymmetric crypto primitives • cryptographic hash function [SHA-1 algorithm]
6	cryptographic hash function [SHA-256 algorithm + SHA-384]
7	cryptographic hash function [SHA-512 algrotihm]
8	Message digest • [SHA-512 algrotihm]

No	Labs Content
9	IP Address and Port Scanning, Service Identity Determination - Use Nmap to scan a network for hosts that are up. - Use Wireshark to analyze the scanning process and capture the packets. - Use Nmap to enumerate the ports and services available on a host. - Identify the qualities of the Nmap ping sweep signature. - Explain the different methods Nmap uses to enumerate the ports normally and stealthily. - Determine and interpret service information from banners obtained via Telnet.
10	GUI-Based Vulnerability Scanners - Use a vulnerability scanner to discover vulnerabilities in a machine. - Analyze the output of the scan. - You will need the following: BackTrack Windows XP Professional Windows 2003 Server **In addition you will need** OpenVAS Researching System Vulnerabilities - Search the CVE database for relevant vulnerabilities. - Search the Internet for information on relevant vulnerabilities. - Search for an exploit that matches a vulnerability.
11	**Using Metasploit** – Use the Metasploit Framework to exploit a given vulnerability using Windows XP Professional and BackTrack **Password Cracking** - Create new user accounts with passwords of different strengths. - Explain the steps necessary to crack a password. - Explain how password hashes can be obtained. - Explain how to perform a password-cracking attack.
	Trojan Attacks - Deploy the Spy-net server. - Configure the Spy-net server. - Use the Spy-net client to manipulate and exploit the remote computer. - **You will need the following:** Windows XP Professional Windows 2003 Server In addition, you will need

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	Spy-net **Man-in-the-Middle Attack** - Define ARP poisoning and man-in-the-middle attacks. - Explain how Ettercap can be used to execute an MITM attack. - Describe the attack signature of an MITM attack. - **You will need the following:** Windows XP Professional Windows 2003 Server BackTrack

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