

GUJARAT TECHNOLOGICAL UNIVERSITY

COMPUTER ENGINEERING (SYSTEMS AND NETWORK SECURITY)

(56)

ETHICAL HACKING

SUBJECT CODE: 2725601

SEMESTER: II

Type of course: Foundation/Core

Prerequisite: Computer Networks, Cryptography and Network Security, Database Management System.

Rationale: objective behind designing this subject is to help student attain the level of knowledge and troubleshooting skills needed to provide capable support in the field of computer and network security so as to protect against malicious hacking activity. The goal of ethical hackers is to help organizations take preemptive measures against malicious attacks by attacking systems themselves, all the while staying within legal limits. This philosophy stems from the proven practice of trying to catch a thief by thinking like a thief.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA(M)	ESE (V)		PA(I)			
					ESE	OEP	PA	RP		
3	2#	0	4	70	30	30	0	10	10	150

Content:

Sr. No	Topics	Teaching Hrs.	Module Weightage
1	Introduction to Ethical Disclosure: Introduction to Ethical Hacking, The Technical Foundations of Hacking, Understanding the Legalities behind Ethical Hacking, Penetration Testing Methodology.	8	20
2	Understanding Steps of Ethical Hacking: Foot printing and scanning, Social Engineering and Physical Security, Enumeration and Step-by-Step System Hacking.	8	20
3	Penetration Tools and Testing: Sniffers, Automated Security Assessment Tools, Using Metasploit, Using Back Track Linux Distribution, Managing a Penetration Test.	8	20
4	Vulnerabilities in Existing technologies: session Hijacking, Denial of Service, Web Server Hacking, Web application Vulnerabilities and Database Attacks, Wireless Technologies, Security and Attacks, IDS, Honeypots and Firewalls, Cryptographic Attacks and Defenses.	7	20
5	Malware Analysis:	2	10

	Collecting Malware and Initial Analysis, Hacking Malware.		
6	Cyber Laws: Introduction to Cyber laws, Information Technology Act 2000 and other laws	2	10

Reference Books:

1. Shon Harris, Allen Harper, Chris Eagle and Jonathan Ness, Gray Hat Hacking: The Ethical Hackers' Handbook, TMH Edition
2. Jon Erickson, Hacking: The Art of Exploitation, SPD

Course Outcome:

After successful completion of the course, student will be able to

- Understand the core concepts related to malware, hardware and software vulnerabilities and their causes.
- Understand ethics behind hacking and vulnerability disclosure.
- Appreciate the Cyber Laws and impact of hacking.
- Exploit the vulnerabilities related to computer system and networks using state of the art tools and technologies.

Major Equipments:

Latest PC with required software

List of Open Source Software/learning website:

- Backtrack Linux Distribution
- Metasploit

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.