



# GUJARAT TECHNOLOGICAL UNIVERSITY

## Master of Engineering

WEF Academic Year	: 2021-22
Semester	: 1
Category of the Course	: Program Elective Course-III
Course Name & Code	: Ethical Hacking Practices (4725903)

### Prerequisite:

- Computer Network, Internetworking concepts.

### Rationale:

- The course will explore the knowledge of attacks and Indicator of Compromises for the system.
- The course will focus on gathering the information at a different level through which a system can be compromised and countermeasures to make it secure.
- The course will also cover advanced attacks based on AI.

### Course Scheme:

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Practical		
				ESE (E)	PA(M)	ESE (V)	PA (I)	
03	00	02	04	70	30	30	20	150

### Course Content:

Sr No	Course Content	No of Hours	%
1	Unit-I: An Introduction to Ethical Hacking: Security Fundamental, Security testing, Hacker and Cracker, Descriptions, Test Plans-keeping It legal, MITRE ATT&CK framework.	04	10
2	Unit-II: The Technical Foundations of Hacking: The Attacker's Process, The Ethical Hacker's Process, Security and the Stack	04	10
3	Unit-III: Footprinting and scanning: Information Gathering, Determining the Network Range, Identifying Active Machines, Finding Open Ports and Access Points, OS Fingerprinting Services, Mapping the Network Attack Surface	06	15
4	Unit-IV: Enumeration, System Hacking and Malware Threats:	06	15



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	Enumeration, System Hacking, Viruses and Worms, Trojans, Covert Communication, Keystroke Logging and Spyware, Malware Countermeasures		
5	Unit-V: Web Server attacks and its Security  Sniffers, Session Hijacking, Denial of Service, Distributed Denial of Service, Web Server Hacking, Web Application Hacking, Database Hacking, Web Server Countermeasures	08	20
6	Unit-IV: Network Security, Wireless Technologies, Mobile Security and Attacks  Intrusion Detection Systems, Firewalls, Honeypots, Wireless Technologies, Mobile Device Operation and Security, Wireless LANs, Physical Security, Social Engineering	08	20
7	Unit-VII: Current Trends  The latest technology attacks with AI and its countermeasures.	04	10

### Text Books/Reference Books:

1. Certified Ethical Hacker, Version 9, Second Edition, Michael Gregg, Pearson IT Certification
2. Hacking the Hacker, Roger Grimes, Wiley
3. The Unofficial Guide to Ethical Hacking, Ankit Fadia, Premier Press

### Course Outcome:

After completion of the Course, Students will be able to:

No	Course Outcomes	RBT Level*
01	To outline the Indicator of Compromise for the system.	UN
02	To develop the attack plan which covers planning, organize and performing penetration testing on a simple network.	AP
03	Analyze different models & techniques for securing the systems.	AN
04	Differentiate the tools to conduct ethical hacking as per the CEH modules.	AP
05	Critiquing how the red team and blue team process in terms to compromise the system and defending the system as per IOC	EL

\*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create



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### **Suggested Course Practical List:**

- The practical work will be carried out based on the content covered during the academic sessions.

### **List of Laboratory/Learning Resources Required:**

- CEH Virtual labs EC Council.
- Pentester Academy Virtual lab based on Privilege escalation
- Course-related online MOOCs on NPTEL/SWAYAM platform
- Recently Published papers/articles in reputed journals