Semester	3
Course Title	Ethical Hacking
Course Code	MMCB311A
Credits	3
Total Hours of Pedagogy	40
L–T–P-S	3-0-0-0
CIE	50
SEE	50
TOTAL	100
Exam Type	Theory
Exam Hours	3 Hrs

Course Learning Objectives:

1. To develop a comprehensive understanding of ethical hacking principles, methodologies, and tools, and recognize the significance of ethical and legal considerations in conducting security assessments.
2. To acquire hands-on proficiency in executing penetration tests, vulnerability assessments, and Ethical hacking techniques across various system components, networks, and applications.
3. To demonstrate the ability to identify, assess, and prioritize vulnerabilities in diverse computing environments using both manual and automated methods, and effectively communicate these findings to stakeholders.
4. To develop a strategic mindset towards cyber security by acquiring knowledge of common attack Vectors,learningtosimulatereal-worldattacks,andimplementingpreventivemeasuresto secure systems, Networks and web applications.

Module I

Introduction to Ethical Hacking: Introduction to ethical hacking and its importance, Legal and ethical considerations in ethical hacking, Differentiating between black hat, white hat, and grey hat hacking, Basic cyber security concepts and terminology, Overview of penetration testing methodologies

Text Book	1,2
Chapter	1:1, 2:1,2
RBT	L2, L3

Module II

Foot printing and Information Gathering: Passive and active information gathering techniques, Who is lookup, DNS enumeration, and social engineering, Tools and methodologies for foot printing, Google hacking and OSINT (Open Source Intelligence) techniques, Predictive and Prescriptive Analytics; Holistic View of Analytics

Text Book	1
Chapter	3
RBT	L2, L3

Module III

Scanning and Enumeration: Port scanning techniques: SYN,TCP,UDP scans; Service enumeration and version detection; NetBIOS, SNMP, and SMTP enumeration; Vulnerability scanning and assessment

Text Book	1
Chapter	3,4,5
RBT	L2, L3

Module IV

System Hacking and Exploitation: Password cracking techniques and tools; Privilege escalation and maintaining access; Malware types and counter measures; Exploiting common vulnerabilities (e.g.,buffer

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overflow, SQL injection)	
Text Book	1
Chapter	7,9,10
RBT	L3, L4

Module V

Web Application and Network Security: Common web vulnerabilities: SQL injection, XSS, CSRF; Web application penetration testing methodology; Network sniffing and spoofing; Intrusion Detection Systems (IDS) and Intrusion Prevention Systems (IPS)	
Text Book	1
Chapter	1,6,12
RBT	L3, L4

Course Outcomes (Course Skill Set):
At the end of the course, the student will be able to:

Sl. No.	Course Outcomes	PO	RBT
1	Explain the core concepts, principles and legal Considerations of ethical hacking.	PO1, PO2	L2
2	Make us of different tools and techniques for information gathering, scanning and enumeration	PO1, PO2	L3
3	Apply tools and techniques for exploiting vulnerabilities, Network sniffing, web application hacking, system hacking, Escalating privileges, etc	PO1, PO2, PO3	L3
4	Analyze the results of IDS/IPS, ethical hacking and penetration testing tasks	PO1, PO2, PO3	L4

Suggested Learning Resources:				
Text Books:				
Sl. No.	Name of the author	Title of the Book	Name of the publisher	Edition and Year
1	Rafay Baloch	Ethical Hacking and Penetration Testing Guide	Rafay Baloch	Ethical Hacking and Penetration Testing Guide
Reference Books:				
Sl. No.	Name of the author	Title of the Book	Name of the publisher	Edition and Year
1	William Stallings	Network Security Essentials: Applications and Standards	Pearson Education Limited, ISBN13:978-1-292-15485-5	2017
2	Patrick Engebretson	The Basics of Hacking and Penetration Testing,	Syngress Publishing, ISBN978-0-12-411644-3	2013

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