

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING - CYBER SECURITY

Lesson Plan & Work-done Diary for AY:2026-27, Odd Semester

Course with Code: VULNERABILITY ASSESSMENT AND PENETRATION TESTING (BCY701)					Faculty: Dr Pavithra M S			Semester & Section: 7 th	
Module	Class No.	Date planned (DD/MM)	Topics to be covered	TLP Planned	Class No.	Date of Conduction (DD/MM)	Topics Covered	TLP Executed	Remarks if any deviation
MODULE-1	1		Bridge Course – Day 1 Course Introduction- Ethical Hacking	Chalk & Talk + PPT					
	2		Bridge Course – Day 2 Ethics in Hacking, Types of hacking	Chalk & Talk + PPT					
	3		Understanding the Enemy's Tactics to get to know attacker mindsets	Chalk & Talk + PPT					
	4		Gray Areas in Security-Legal vs. ethical boundaries; disclosure dilemmas	Chalk & Talk + PPT					
	5		Vulnerability Assessment vs. Penetration Testing, Phases of penetration testing	Chalk & Talk + PPT					
	6		Introduction to Social Engineering - Understand the human element in attacks. Social Engineering Attack Works – phases and principles.	Chalk & Talk + PPT					
	7		Conducting a Social Engineering Attack- Techniques: Pretexting, baiting, phishing, tailgating.	Chalk & Talk + PPT					
	8		Common Attacks in Penetration Testing	Chalk & Talk + PPT					
	9		Defending Against Social Engineering Attacks	Chalk & Talk + PPT					



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MODULE-2	10		Need for Physical Penetration Testing- Importance of physical penetration in holistic security testing.	Chalk & Talk + PPT					
	11		Conducting a Physical Penetration Planning and reconnaissance for physical pentests.	Chalk & Talk + PPT					
	12		Common Ways into a Building-Tailgating, lock bypassing, social engineering for access, badge cloning	Chalk & Talk + PPT					
	13		Defending Against Physical Penetrations Physical security controls (locks, cameras, guards, policies).	Chalk & Talk + PPT					
	14		Insider Attacks – Introduction & Conducting	Chalk & Talk + PPT					
	15		Defending Against Insider Attacks - Technical controls, Administrative controls, Behavioral analysis and incident response.	Chalk & Talk + PPT					
	16		Metasploit – Getting familiar with the framework	Chalk & Talk + PPT					
	17		Using the Metasploit Console to Launch Exploits, Basic Work flow	Chalk & Talk + PPT					
	18		Exploiting Client-Side Vulnerabilities & Meterpreter	Chalk & Talk + PPT					
	19		Automating, Scripting Metasploit	Chalk & Talk + PPT					



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MODULE-3	20		Planning a Penetration Test Importance of proper planning.	Chalk and Talk + PPT					
	21		Structuring a Penetration Testing Agreement - Key elements of a pentest agreement (RoE, liabilities, boundaries)	Chalk and Talk + PPT					
	22		Execution of a Penetration Test & Information Sharing	Chalk and Talk + PPT					
	23		Reporting the Results of a Penetration Test- Structure of a good pentest report, Risk rating	Chalk and Talk + PPT					
	24		Basic Linux Exploits – Stack Operations & Buffer Overflows	Demo					
	25		Local Buffer Overflow Exploits - Developing and executing local buffer overflow exploits	Demo					
	26		Exploit Development Process	PPT + Demo					
	27		Windows Exploits – Compiling, Debugging & Writing Exploits	Demo					
	28		SEH, Memory Protections & Bypassing	PPT					





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MODULE-4	29		Overview of Top Web Application Security Vulnerabilities - Introduction to OWASP Top 10.	PPT					
	30		Injection Vulnerabilities- Types of injection flaws	PPT					
	31		SQL Injection Vulnerabilities SQL Injection mechanics, union-based, error-based, blind SQLi	PPT + Demo					
	32		Cross-Site Scripting (XSS) Vulnerabilities Reflected, Stored, and DOM-based XSS.	PPT + Demo					
	33		Broken Authentication, Sensitive Data Exposure, Broken Access Control, Security Misconfiguration, CSRF, etc.	PPT					
	34		Passive Vulnerability Analysis – Source Code Analysis - Identifying vulnerabilities through code patterns.	PPT + Demo					
	35		Passive Vulnerability Analysis – Binary Analysis	PPT + Demo					





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MODULE-5	36		Client-Side Vulnerabilities & IE Security Concepts- Internet Explorer security model and concepts (security zones, protected mode)	PPT					
	37		History of Client-Side Exploits and Latest Trends - Historical client-side exploits and major incidents, Latest trends in browser-based attacks	PPT					
	38		Finding New Browser-Based Vulnerabilities - Methods for finding browser vulnerabilities (fuzzing, code auditing).	PPT + Demo					
	39		Heap Spray Technique & Exploitation	Demo					
	40		Protecting from Client-Side Exploits - Browser hardening, updates, sandboxing, and user practices.	Demo					
	41		Malware Analysis – Collecting, Honeynets, Catching & Initial Analysis	PPT + Demo					



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	Activity	Planned	Actual	Remarks
1	Theory Classes	41		
2	Assignments/Quizzes/ Self study	2		
3	Tutorials/ Extra classes	0		
4	Internal Assessments	3		
5	ICT based Teaching (% of usage in Curriculum)	50%		
Planning			Execution	
Faculty Signature:			Faculty Signature:	
HOD Signature:			HOD Signature:	