



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Wales Institute of Science and Art

Applied Computing

Advanced Cybersecurity (ACCB6000)

MILESTONE - Academic Year 2021-22 (Jan 2022)

Lecturer: Dr. Nitheesh Murugan Kaliyamurthy

Contact: n.kaliyamurthy@uwtsd.ac.uk

To provide information about Cyber Security concepts and a deep understanding of how they are applied using Internet technologies. Understanding of up-to-date security threats and vulnerabilities posed to the Internet and the legal, policy and technical approaches that are necessary to mitigate such risks

Week	Topic	Concepts	Labs	Assessments
Week 1 (24-01-22)	Introduction - Cyberrisk and Risk Assessment	Introduction to Advance Cybersecurity concepts, Principles of Risk Management, Cyber Risk Assessment, Monitoring and Resilience.	Lab Requirements (Tools - Download, Setup and Coursework Description)	N/A
Week 2 (31-01-22)	Footprinting and Reconnaissance	Footprinting Concepts, Methodology, Tools, Countermeasures and Pentest Notes	Lab 1: Footprinting	Research on other available tools for to execute similar tasks done in our labs. Record your configurations and reflections. Write a summary (Use citations, screen captures appropriately as evidence). Use shall use them in Part 2 Section ii of your assessment.
Week 3 (07-02-22)	Scanning Networks and Enumeration	Network Scanning and Enumeration Concepts, Tools and Techniques, OS Fingerprinting.	Lab 2: Scanning Networks and Enumeration	
Week 4 (14-02-22)	Vulnerability Assessment	VA Concepts, Tools and Reports	Lab 3: VA Tools	
Week 5 (21-02-22)	System Hacking	Passwords, Escalations, Covering Tracks, Pentest Concepts	Lab 4: Passwords Extracting and Recovering, Remote Monitoring and Hidden Files	
Week 6 (28-02-22)	Social Engineering	SE Concepts, Techniques, Insider Threats, Identity Thefts, Countermeasures, Pentest Notes	Lab 5: Phishing sites and Attacks, Credential Harvesting Attack	Portfolio 1 Online Test
Week 7 (07-03-22)	Firewalls	Firewall Concepts, Technologies, Checkpoint Technologies.	Lab 6: Overview of Checkpoint GAIA	Research on other available tools for to

Week 8 (14-03-22)	Web Servers and Web Applications	Web Servers and Applications, Threats, Attack Methods, Tools,Countermeasures.	Lab 7: Web Server Security Reconnaissance, Shellshock Exploitation	execute similar tasks done in our labs. Record your configurations and reflections. Write a summary (Use citations, screen captures appropriately as evidence). Use shall use them in Part 2 Section ii of your assessment.
Week 9 (21-03-22)	Discussions: Types of Penetration Testing, Post Engagement Cleanup and Pen Test Report	Internal, External, Physical and Wireless Pentesting. Post Engagement Cleanup, Report Writing.	Compile all the labs and draft the report	
Week 10 (28-03-22)	Discussions: Types of Penetration Testing, Post Engagement Cleanup and Pen Test Report			
EASTER BREAK				
Week 11 (25-04-22)	Revision/ Theoretical Concepts and Tutorials			
Assessment (Component 1 - Portfolio)				
	Outcome	Date/ Deadline		
Portfolio 1 (30%)	Demonstrate a systematic understanding of a wide range of current research and technological advances in Cyber Security	3rd March 2022	MCQ - Online Test	
Portfolio 2 (70%)	Demonstrate a systematic understanding of a wide range of current research and technological advances in Cyber Security	29th April 2022	Course work (5000 words equivalent): Research and Propose Strategy - Based on the given scenario, do a detailed research and propose optimal solution and strategies to overcome the problem.	
	Consistently apply the principles and practices of Cyber Security for mitigating the key technical internet security vulnerabilities and threats that organisations face	29th April 2022	Practical Implementation - Use any tools that was not experimented during our tutorials to mitigate Internet Security Vulnerability/	
Readings				
Book	The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws, 2ed. Author: D. Stuttard.			
Book	Cracking the Coding Interview: 189 Programming Questions and Solutions 6th Edition. Author: Gayle Laakmann.			
Book	Basic Security, Penetration Testing and How to Hack. Author: Isaac Sharpe.			

Book	Counter Hack Reloaded: A Step-by-Step Guide to Computer Attacks and Effective Defenses (2nd Edition) 2nd Edition. Authors: Edward Skoudis, and Tom Liston.			
Book	Cyber Insecurity: Navigating the Perils of the Next Information Age. Author: Richard Harrison.			
Resources	IEEE/ACM, IEEE/ACM Transactions on Networking	IEEE, IEEE Network Magazine	Science Direct	Scopus
Resources	ACM Transactions on Information Systems	ACM Transactions on Database Systems		
Resources	http://www.veracode.com/directory/owasp-top-10	https://www.owasp.org/index.php/Main_Page	www.dvwa.co.uk	
Resources	http://www.vulnerabilityassessment.co.uk/Penetration%20Test.html			
Resources	http://www.softwaretestinghelp.com/penetration-testing-tools/			
Resources	DoD Cyber Crime Center (http://www.dc3.mil)	http://www.digitalforensicsmagazine.com/		
Resources	https://owasp.org/www-project-juice-shop/			