TRINEONLINE

Course Mapping

IS 5403 Cybersecurity

Course Description:

This course provides knowledge and practical skills required for a variety of cybersecurity roles. Throughout this course, students will use technologies and tools to identify and address security threats, attacks and vulnerabilities. Emphasis is placed on the latest trends and techniques in risk management, risk mitigation, threat management and intrusion detection. This course also covers principles and foundations of network architecture and design, cryptography, and PKI.

Learning Outcomes:

1. Compare elements of cybersecurity to societal vulnerabilities.
2. Assess threats, vulnerabilities, and intelligence to reduce exposure to attacks.
3. Evaluate cryptography by weighing its importance to data security.
4. Design simple computer networks and secure protocols for safe network usage.
5. Develop firewalls, intrusion detection, and intrusion protection approaches to ensure security of networks.
6. Implement secure network architecture practices.
7. Create organizational cybersecurity processes and procedures.

Week and Title	Weekly Learning Outcome Alignment	Learning Activities and Materials (LO alignment)	Assessments (LO alignment)
Week One: Introduction to Cybersecurity Tools & Cyber Attacks	1. Compare elements of cybersecurity	Listen & Read (Coursera): 1. History of Cybersecurity – 17 videos, 9 Readings (LO1)	1. History of Cybersecurity – 7 Quizzes (LO1) 2. Types of Actors and Their Motives – 7 Quizzes (LO2) 3. Overview of Key Security Concepts – 5 Quizzes (LO 1,4,6,7)

	2. Assess threats, vulnerabilities, and intelligence to reduce exposure to attacks. 4. Design simple computer networks and secure protocols for safe network usage. 5. Develop firewalls, intrusion detection, and intrusion protection approaches to ensure security of networks. 6. Implement secure network architecture practices. 7. Create organizational cybersecurity processes and procedures.	2. Types of Actors and Their Motives – 27 videos, 3 Readings (LO2) 3. Overview of Key Security Concepts – 14 videos, 4 Readings (LOs 1,4,6,7) 4. Overview of Key Security Tools – 16 videos, 2 Readings (LOs 5-6) Listen (Podcasts & Stories): 1. "Up in the Air" with Dr. Brandon McIver (Cyber Security Tools vs Cyber Defense Tools) 27:06 (LOs 4-7) 2. "Storytime" with Dr. Brandon McIver (Operational Cyber) 15:25 (LOs 4-7)	4. Overview of Key Security Tools – 5 Quizzes (LOs 5-7) 5. Podcast Discussion (LOs 4-7) 6. Podcast Quiz (LOs 4-7) 7. Storytime Video Response (LOs 4-7) 8. Week 1 Reflection Blog (LOs 4-7) 9. Certificate and Score Submissions (LOs 1-2, 4-7)
Week Two: Cybersecurity Roles, Processes, & Operating System Security	6. Implement secure network architecture practices 7. Create organizational cybersecurity processes and procedures.	Listen & Read (Coursera): 1. People Process & Technology – 9 videos, 4 readings (LO7) 2. Examples & Principles of the CIA Triad – 5 videos, 1 reading (LO6) (LO7) 3. Authentication and Access Control – 5 videos, 1 reading (LO6) (LO7) 4. Windows OS Security Basics – 6 videos (LO6) 5. Linux OS Security Basics – 4 videos, 3 readings (LO6) 6. macOS Security Basics – 3 videos, 1 reading (LO6)	1. People Process & Technology –4 Quizzes (LO7) 2. Examples & Principles of the CIA Triad – 2 quizzes (LO6) (LO7) 3. Authentication and Access Control – 3 quizzes (LO6) (LO7) 4. Windows OS Security Basics – 4 quizzes (LO6) 5. Linux OS Security Basics – 4 quizzes (LO6) 6. macOS Security Basics – 1 quiz (LO6) 7. Overview of Virtualization – 2 quizzes (LO6) 8. Podcast Discussion (LO6) (LO7) 9. Podcast Quiz (LO6) (LO7) 10. Storytime Video Response (LO6) (LO7) 11. Week 2 Reflection Blog (LO6) (LO7) 12. Certificate and Score Submissions (LO6) (LO7)

		7. Overview of Virtualization – 6 videos, 1 reading (LO6) Listen (Podcasts & Stories): 1. "Up in the Air" with Dr. Brandon McIver (Cybersecurity Leadership and Operations) 33:48 (LO1) (LO2) 2. "Storytime" with Dr. Brandon McIver (The Cybersecurity Spectrum) 11:20 (LO6) (LO7)	
Week Three: Cybersecurity Compliance Framework & System Administration	1. Compare elements of cybersecurity to societal vulnerabilities 2. Assess threats, vulnerabilities, and intelligence to reduce exposure to attacks 3. Evaluate cryptography by weighing its importance to data security 4. Design simple computer networks and secure protocols for safe network usage. 5. Develop firewalls, intrusion detection, and intrusion protection approaches to ensure security of networks. 6. Implement secure network architecture practices 7. Create organizational cybersecurity processes and procedures	Listen & Read (Coursera): 1. Compliance Frameworks and Industry Standards – 13 videos, 8 readings (LO4) 2. Client System Administration, Endpoint Protection and Patching – 7 videos, 5 readings (LO4) (LO5) 3. Server and User Administration – 21 videos, 3 readings (LO4) (LO5) 4. Cryptography and Compliance Pitfalls – 12 videos, 8 readings (LO3) 5. Linux and Encryption: Final Project – 1 video, 1 reading (LO3) (LO4) Listen (Podcasts & Stories): 1. "Storytime" with Dr. Brandon McIver (Why Frameworks Matter) 13:29 (LO1) (LO2) Watch: 1. Cybersecurity Architecture Principles 17:34 (LO6) (LO7)	1. Compliance Frameworks and Industry Standards – 5 quizzes (LO4) 2. Client System Administration, Endpoints Protection and Patching – 3 quizzes (LO4) (LO5) 3. Server and User Administration – 3 quizzes (LO4) (LO5) 4. Cryptography and Compliance Pitfalls – 3 quizzes (LO3) 5. Storytime Video Response (LO2) 6. Cybersecurity Architecture: Principles Response (Presentation) 2:00 (LO6) (LO7) 7. Cybersecurity Architecture: Fundamentals Response (Presentation) 2:00 (LO6) (LO7) 8. Week 3 Reflection Blog (LO2) 9. Certificate and Score Submissions (LOs 3-5)

		2. Cybersecurity Architecture Fundamentals 12:34 (LO6) (LO7)	
Week Four: Network Security & Database Vulnerabilities	4. Design simple computer network and secure protocols for safe network usage. 6. Implement secure network architecture practices	Listen & Read (Coursera): 1. TCP/IP Framework – 16 videos, 3 readings (LO4) 2. Basics of IP Addressing and the OSI Model – 16 videos (LO4) 3. Introduction to Databases – 18 videos, 1 reading (LO4) 4. Deep Dive – Injection Vulnerability – 8 videos, 5 readings (LO6) 5. Final Project (LO4) (LO6) Listen (Podcasts & Stories): 1. "Up in the Air" with Dr. Brandon McIver (Let's talk Databases and Developers) 32.24 (LO6) 2. "Storytime" with Dr. Brandon McIver (Vulnerability Management) 10:33 (LO4) (LO6)	1. TCP/IP Framework – 4 quizzes (LO4) 2. Basics of IP Addressing and the OSI Model – 6 quizzes (LO4) 3. Introduction to Databases – 4 quizzes (LO4) 4. Deep Dive – Injection Vulnerability – 4 quizzes (LO6) 5. Final Project (LO4) (LO6) 6. Podcast Discussion (LO6) 7. Podcast Quiz (LO6) 8. Storytime Video Response (LO4) (LO6) 9. Week 4 Reflection Blog (LO4) (LO6) 10. Certificate and Score Submissions (LO4) (LO6)
Week Five: Penetration Testing, Incident Response and Forensics	2. Assess threats, vulnerabilities, and intelligence to reduce exposure to attacks 6. Implement secure network architecture practices 7. Create organizational cybersecurity processes and procedures	Listen & Read (Coursera): 1. Penetration Testing – 8 videos, 7 readings (LO2) 2. Incident Response – 9 videos, 8 readings (LO7) 3. Digital Forensics – 8 videos, 3 readings (LO2) 4. Introduction to Scripting – 9 videos, 7 readings (LO6)	1. Penetrating Testing – 4 quizzes (LO2) 2. Incident Response – 2 quizzes (LO7) 3. Digital Forensics – 4 quizzes (LO2) 4. Introduction to Scripting – 3 quizzes (LO6) 5. Storytime Video Response (LO6) (LO7) 6. Cybersecurity Architecture: Detection - Response (Presentation) 2:00 (LO6) (LO7) 7. Cybersecurity Architecture: Response - Response (Presentation) 2:00 (LO6) (LO7) 8. Week 5 Reflection Blog (LO2) (LO6) (LO7) 9. Certificate and Score Submissions (LO2) (LO6) (LO7)

		Listen (Podcasts & Stories): 1. "Storytime" with Dr. Brandon McIver (Stop the Madness of Incident Response) 15:03 (LO6) (LO7) Watch: 1. Cybersecurity Architecture: Detection 17:10 (LO6) (LO7) 2. Cybersecurity Architecture: Response 16:57 (LO6) (LO7)	
Week Six: Cyber Threat Intelligence	1. Compare elements of cybersecurity to societal vulnerabilities 2. Assess threats, vulnerabilities, and intelligence to reduce exposure to attacks 5. Develop firewalls, intrusion detection, and intrusion protection approaches to ensure security of networks	Listen & Read (Coursera): 1. Threat Intelligence – 5 videos, 3 reading (LO1) (LO2) 2. Data Loss Prevention and Mobile Endpoint Protection – 8 videos, 2 readings (LO2) 3. Scanning – 3 videos, 1 reading (LO5) 4. Application Security and Testing – 12 videos, 1 reading (LO5) 5. SIEM Platforms – 7 videos, 4 readings (LO5) 6. Threat Hunting – 3 videos, 3 readings (LO2) (LO5) Listen (Podcasts & Stories): 1. "Up in the Air" with Dr. Brandon McIver (Cyber Threat Intelligence) 33:37 (LO1) 2. "Storytime" with Dr. Brandon McIver (Contested Environment) 13:39 (LO1) (LO2)	1. Threat Intelligence – 3 quizzes (LO1) (LO2) 2. Data Loss Prevention and Mobile Endpoint Management – 3 quizzes (LO2) 3. Scanning – 4 quizzes (LO5) 4. Application Security and Testing – 5 quizzes (LO5) 5. SIEM Platforms – 3 quizzes (LO5) 6. Threat Hunting – 2 quizzes (LO2) (LO5) 7. Podcast Discussion (LO1) 8. Podcast Quiz (LO1) 9. Storytime Video Response (LO1) (LO2) 10. Week 6 Reflection Blog (LO1) (LO2) (LO5) 11. Certificate and Score Submissions (LO1) (LO2) (LO5)

Week Seven: Cybersecurity Capstone: Breach Response Case Studies	6. Implement secure network architecture practices 7. Create organizational cybersecurity processes and procedures	Watch: 1. Cybersecurity Architecture Role & Tools 14:07 (LO6) (LO7) 2. Identity and Access Management 31:15 (LO6) (LO7) 3. Endpoint Management 14:22 (LO6) (LO7)	1. Cybersecurity Capstone – Breach Response Case Studies (LO6) (LO7) 2. Cybersecurity Architecture Role & Tools Response (Presentation) 2:00 (LO6) (LO7) 3. Identity and Access Management Response (Presentation) 2:00 (LO6) (LO7) 4. Endpoint Management Response (Presentation) 2:00 (LO6) (LO7) 5. Week 7 Reflection Blog (LO1)(LO2)(LO6) (LO7)
Week Eight: IBM Cybersecurity Architecture	6. Implement secure network architecture practices. 7. Create organizational cybersecurity processes and procedures.	Watch: 6. Cybersecurity Architecture Network Security 27:31 (LO6) (LO7) 7. Cybersecurity Architecture: Application Security 16:36 (LO6) (LO7) 8. Cybersecurity Architecture: Data Security 14:48 (LO6) (LO7)	3. Cybersecurity Architecture Role & Tools Response (Presentation) 2:00 (LO6) (LO7) 4. Identity and Access Management Response (Presentation) 2:00 (LO6) (LO7) 5. Endpoint Management Response (Presentation) 2:00 (LO6) (LO7) 6. Cybersecurity Architecture Network Security Response (Presentation) 2:00 (LO6) (LO7) 7. Cybersecurity Architecture: Application Security Response (Presentation) 2:00 (LO6) (LO7) 8. Cybersecurity Architecture: Data Security Response (Presentation) 2:00 (LO6) (LO7)