# **Course Alignment for CIS-2640 [3 Credit Hours]**

| **CO 1** | Network Infrastructure Protection: Assess network vulnerabilities and attacks, identify hardware and software defenses needed to protect the infrastructure in both wired and wireless installations, and the strategies used to protect a network infrastructure. |
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| **CO 2** | Cryptography in Networks: Use cryptography including the proper use of algorithms, digital certificates, public key cryptographic standards, key management, and cryptographic transport protocols to create secure networks. |
| **CO 3** | Network Access Control and Vulnerability Mitigation: Control access to and mitigate vulnerabilities in wired and wireless networks. |

**Note:** Course Objectives are institutionally mandated and taken from the [Master Syllabus](https://cmt.sinclair.edu/#reports.mastersyllabus).

# **Course Structure and Alignment**

**Note:** Topic Objectives are developed by the course coordinator to align with the Course Objectives.

|  | **Topic Name** | | **Topic Objectives** | | **CO #** | **Materials** | **Activities** | **Assessments** |
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| **Unit 1** | **1** | **Introduction and Security Trends**  **General Security Concepts** | (TLO1) Explain recent trends in computer security. | | 1 | Chapter 1 and 2 | Read assigned textbook chapters. | Quiz | Topic 1  Start Research Paper |
| (TLO2) Identify approaches to computer security. | | 1 |
| (TLO3) Define basic terms associated with computer and information security. | | 1 |
| (TLO4) Identify the basic principles of computer and information security. | | 1 |
| (TL05) Evaluate some of the basic models used to implement security in operating systems. | | 1 |
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| **Unit 1** | **2** | **Operational and Organizational Security**  **The Role of People in Security** | (TLO1) Understand various operational aspects to security. | | 1 | Chapter 3 and 4 | Read assigned textbook chapters.  Complete NETLAB Lab Assignment | Quiz | Topic 2  NETLAB Lab | Topic 2  NETLAB #: Lab 01: Social Engineering Attacks  NETLAB # Lab 2: Analyze Types of Malware & Application Attacks |
|  |  | (TLO2) Understand various policies and procedures. | | 1 |
| (TLO3) Differentiate basic terminology associated with social engineering. | | 1 |
| (TLO4) Recognize methods attackers may use to gain information. | | 1 |
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| **Unit 2** | **3** | **Cryptography Principles**  **Applied Cryptography** | (TLO1) Understand the fundamentals of cryptography. | | 2 | Chapter 5 and 6 | Read assigned textbook chapters.  Complete NETLAB Assignments  Submit Research Project Topic | NETLAB # Lab 14: Cryptography Concepts  NETLAB # Lab 15: Implementing Common Protocols and Services for Basic Security Practices  Research Project Topic due  Quiz | Topic 3  NETLAB Lab | Topic 3 |
| (TLO2) Identify the three types of cryptography. | | 2 |
| (TLO3) Explain current cryptographic algorithms. | | 2 |
| (TLO4) Explain how cryptography is applied for security. | | 1,2,3 |
| (TLO5) Examine cipher suites and their common uses. | | 1,2,3 |
| **Unit 2** | **4** | **Public Key Infrastructure**  **Physical Security**  **25% Check Point** | (TLO1) Describe the roles of certificate authorities and certificate repositories. | | 2 | Chapter 7 and 8 | Read assigned textbook chapters.  Complete NETLAB Lab Assignment | NETLAB # Lab 21: PKI Management with Windows  Quiz | Topic 4  NETLAB Lab | Topic 4 |
| (TLO2) Implement the basics of public key infrastructures. | | 2 |
| (TLO3) Explain the relationship between trust and certificate verification. | | 2 |
| (TLO4) Describe how physical security directly affects computer and network security. | | 3 |
|  | | (TLO5) Identify the physical security components that can protect your computers and network. | | 1 |
| **Unit 3** | **5** | **Network Fundamentals**  **Infrastructure Security** | (TLO1) Examine segregation, segmentation, and isolation with respect to network architectures | | 1 | Chapter 9 and 10 | Read assigned textbook chapters.  Complete NETLAB Lab Assignment | NETLAB # 22 Capturing Network Traffic  NETLAB # Lab 17: Configuring a Network Based Firewall  Quiz | Topic 5  NETLAB Lab | Topic 5 |
| (TLO2) Identify the basic network architectures | | 1 |
| (TLO3) Understand security devices employed in a network | | 1,3 |
| (TLO4) Explain basic terminology associated with network functions related to information security | | 1,3 |
| (TLO5) Describe the different types of storage media, including the cloud, used to store information. | | 1,3 |
|  | **6** | **Authentication and Remote Access**  **Wireless Security and Mobile Devices** | (TLO1) Explain authentication methods and the security implications in their use | | 1 | Chapter 11 and 12 | Read assigned textbook chapters.  Complete NETLAB Lab Assignment | NETLAB # Lab 18: Wireless Networking Attack and Mitigation Techniques  Quiz | Topic 6  NETLAB Lab | Topic 6 |
|  | (TLO2) Describe methods of access management (MAC, DAC, RBAC, and ABAC) | | 1,3 |
| (TLO3) Evaluate different wireless configurations and deployments. | | 1 |
| (TLO4) Identify the different types of wireless attacks. | | 1 |
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| **Unit 4** | **7** | **Intrusion Detection Systems and Network Security**  **System Hardening and Baselines** | (TLO1) Apply the appropriate network tools to facilitate network intrusion detection. | | 1,3 | Chapter 13 and 14 | Read assigned textbook chapters.  Complete NETLAB Lab Assignment  Complete Research Project Outline | NETLAB # Lab 08: Identifying and Analyzing Network/Host Intrusion Detection System (NIDS/HIDS) Alerts  Quiz | Topic 7  NETLAB Lab | Topic 7  Research Project Outline |
| (TLO2) Describe operating systems hardening. | |  |
| (TLO3) Evaluate application and code security. | | 1 |
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|  | **9** | **Types of Attacks and Malicious Software**  **Security Tools and Techniques**  **50% Check Point** | (TLO1) Identify the different types of malicious software that exist. | | 1,3 | Chapter 15 and 16 | Read assigned textbook chapters.  Complete NETLAB Lab Assignment | NETLAB # Lab 05: Analyzing Types of Attacks and Mitigation Techniques  NETLAB # Lab 06: Vulnerability Checks with OpenVAS  Quiz | Topic 9  NETLAB Lab | Topic 9 |
| (TLO2) Evaluate the various types of computer and network attacks | | 1,3 |
| (TLO3) Explain penetration and vulnerability testing methods. | | 1,3 |
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| **Unit 5** | **10** | **Web Components, E-mail, and Instant Messaging**  **Cloud Computing** | (TLO1) Describe security issues associated with email and instant messaging. | | 1,3 | Chapter 17 and 18 | Read assigned textbook chapters.  Complete NETLAB Lab Assignment | NETLAB # Lab 03: Analyzing Types of Web Application Attacks  Quiz | Topic 10  NETLAB Lab | Topic 10 |
| (TLO2) Explain web-based application security issues. | | 2,3 |
| (TLO3) Evaluate cloud security controls | | 2,3 |
| (TLO4) Compare and contrast cloud security solutions | | 2,3 |
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| **11** | **Secure Software Development**  **Risk Management** | (TLO1) Explain the importance of application security. | | 1,2 | Chapter 19 and 20 | Read assigned textbook chapters. | Quiz | Topic 11 |
| (TLO2) Evulate good software development practices how they impact application security. | | 1 |
| (TLO3) Identify risk mitigation strategies | | 1 |
|  |  | (TLO4) Explain the differences between qualitative and quantitative risk assessment. | | 1 |
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| **Unit 6** | **12** | **Business Continuity, Disaster Recovery, and Change Management**  **Incident Response** | (TLO1) Describe the various ways backups are conducted and stored. | | 1 | Chapter 21 and 22 | Read assigned textbook chapters.  Participate in discussion.  Complete NETLAB Lab Assignment | NETLAB # Lab 23: Incident Response Procedures  Quiz | Topic 12  NETLAB Lab | Topic 12 |
| (TLO2) Identify the essential elements of change management | | 1 |
| (TLO3) Explain the detailed steps of an incident response process | | 1 |
| (TLO4) Describe standards and best practices involved in incident response. | | 1 |
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|  | **13** | **Computer Forensics**  **Legal Issues and Ethics**  **75% Check Point** | (TLO1) Explain the basics of digital forensics. | | 1 | Chapter 23 and 24 | Read assigned textbook chapters.  Complete NETLAB Lab Assignment | NETLAB # Lab 25: Using Autopsy for Forensics and Lost Data Recovery  Quiz | Topic 13  NETLAB Lab | Topic 13 |
| (TLO2) Examine system artifacts. | | 1 |
| (TLO3) Identify the laws that govern computer access and trespass | | 1 |
| (TLO4) Identify the laws that govern encryption and digital rights management | | 2 |
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|  | **14** | **Privacy** | (TLO1) Examine concepts of privacy | | 1 | Chapter 25 | Read assigned textbook chapters.  Complete Lab Project 25.1 Paper | Quiz | Topic 14 |
| (TLO2) Describe issues associated with technology and privacy | | 1 |
| (TLO3) Explain the concept of personally identifiable information (PII) | | 1 |
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| **Unit Research Paper and Presentation** |  | **Research Paper** |  | |  | None | Submit Research Paper | Research Paper due |
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|  |  | **Research Presentation** |  | |  | None | **Present Research Project** | Research Project presentation due. |