# **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 1Start 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 2NETLAB Lab | Topic 2NETLAB #: Lab 01: Social Engineering AttacksNETLAB # 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 AssignmentsSubmit Research Project Topic | NETLAB # Lab 14: Cryptography ConceptsNETLAB # Lab 15: Implementing Common Protocols and Services for Basic Security Practices Research Project Topic dueQuiz | Topic 3NETLAB 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 4NETLAB 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 5NETLAB 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 6NETLAB 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 AssignmentComplete Research Project Outline | NETLAB # Lab 08: Identifying and Analyzing Network/Host Intrusion Detection System (NIDS/HIDS) Alerts Quiz | Topic 7NETLAB Lab | Topic 7Research 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 TechniquesNETLAB # Lab 06: Vulnerability Checks with OpenVASQuiz | Topic 9NETLAB 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 AttacksQuiz | Topic 10NETLAB 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 ProceduresQuiz | Topic 12NETLAB 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 13NETLAB 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. |