

## COURSE SYLLABUS

<b>LAST REVIEW</b>	Fall 2022
<b>COURSE TITLE</b>	Network Security
<b>COURSE NUMBER</b>	CIST 0125
<b>DIVISION</b>	Career and Technical Education
<b>DEPARTMENT</b>	CIST
<b>CIP CODE</b>	24.0101
<b>CREDIT HOURS</b>	3
<b>CONTACT HOURS/WEEK</b>	Class: 3      Lab:
<b>PREREQUISITES</b>	None

### COURSE DESCRIPTION

This course provides the skills necessary to apply and implement technical knowledge of network security concepts in a diverse information technology environment. Students will gain a depth knowledge of systems security across multiple vendor products and network communications from a security standpoint. Students will be given real world scenarios to reinforce the material covered in this course and they will learn how to apply hardware and software security solutions.

### PROGRAM ALIGNMENT

This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:

[https://kansasregents.org/workforce\\_development/program-alignment](https://kansasregents.org/workforce_development/program-alignment)

### PROGRAM LEARNING OUTCOMES

1. Demonstrates the necessary skills to score at least a 70% in the Network 1 course.
2. Obtain the skills necessary to pass the Certification COMPTIA SEC+ certification.
3. Applies judicious and ethical offensive security techniques using knowledge gained through cyber security coursework.
4. Obtain the skills necessary to pass the NET+ certification.

### TEXTBOOKS

<http://kckccbookstore.com/>

### METHOD OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to lecture, multimedia, cooperative/collaborative learning,

labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

## **COURSE OUTLINE**

- I. Networking security fundamentals
  - A. Network defense
  - B. Security technologies
  - C. Access control
  - D. Impact of defense
  - E. Network auditing
- II. Firewall
  - A. Firewall elements
  - B. Firewall policy
  - C. Rule sets and packet filters
  - D. Proxy servers
  - E. Bastion host
  - F. Honeypot
  - G. Firewall implementation
  - H. Check Point
  - I. Microsoft Internet Security and Acceleration Server (ISA)
  - J. IP Tables
- III. Virtual private network (VPN)
  - A. VPN Basics
  - B. Tunnel protocols
  - C. VPN design and architecture
  - D. VPN security and Implementation
- IV. Intrusion Detection System
  - A. Goals of Intrusion detection system
  - B. Intrusion detection technologies and techniques
  - C. Host and Network based intrusion detection
  - D. Intrusion detection analysis.
- V. Intrusion detection system configuration
  - A. Snort foundations
  - B. Snort installation
  - C. Snort as an Intrusion detection system
  - D. ISS scanners
- VI. Intrusion signatures
  - A. Common vulnerabilities and exposures
  - B. Signature analysis
  - C. Normal and Abnormal traffic signatures
- VII. Wireless security
  - A. Introduction to Wireless networking

- B. WLAN basics
  - C. Wireless security solutions
  - D. Wireless auditing
  - E. Wireless trusted networks
- VIII. Transmission security
- A. Types of transmissions
  - B. Security considerations for various transmissions
  - C. Secure transmissions

### **COURSE LEARNING OUTCOMES AND COMPETENCIES**

Upon completion of the course, the student will:

- A. Explain the fundamentals of networking security.
  1. Explain the implementing of network defense.
  2. Explain security technologies principles.
  3. Explain access control.
  4. Explain the impact of defense.
  5. Explain network auditing.
  
- B. Explain firewall fundamentals.
  6. Explain firewall elements and policies.
  7. Explain the rule sets and packet filters.
  8. Explain proxy servers.
  9. Explain bastion host concepts.
  10. Explain the Concepts of honeypot.
  11. Explain the firewall implementation.
  12. Explain the fundamentals of Check Point.
  13. Implement Microsoft Internet Security and Acceleration Server.
  14. Explain the implementation of IP tables.
  
- C. Explain the Virtual private network fundamentals.
  15. Explain the virtual private network fundamentals.
  16. Explain tunnel protocols.
  17. Explain VPN design and architecture.
  18. Explain VPN security and Implementation.
  
- D. Explain Intrusion detection system.
  19. Explain the goals of Intrusion detection system.
  20. Explain intrusion detection technologies and techniques.
  21. Implement host and Network based intrusion detection.
  22. Analyze intrusion detection.
  
- E. Configure intrusion detection system.
  23. Explain Snort foundations.
  24. Explain Snort installation.

25. Explain the use of Snort as an Intrusion detection system.
  26. Implement ISS scanners.
- F. Explain Intrusion signatures.
27. Explain common vulnerabilities and exposures.
  28. Analyze signatures.
  29. Explain normal and abnormal traffic signatures.
- G. Explain Wireless security.
30. Explain Wireless networking.
  31. Explain WLAN basics.
  32. Explain Wireless security solutions.
  33. Explain Wireless auditing.
  34. Explain Wireless trusted networks.
- H. Explain transmission security.
35. Explain types of transmissions.
  36. Explain Security considerations for various transmissions.
  37. Explain how to secure transmissions.

### **ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES**

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

### **COLLEGE POLICIES AND PROCEDURES**

*Student Handbook*

<https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf>

*College Catalog*

<https://www.kckcc.edu/academics/catalog/index.html>

*College Policies and Statements*

<https://www.kckcc.edu/about/policies-statements/index.html>

*Accessibility and Accommodations*

<https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html>.