

ITN 260

Network Security Basics

COURSE OUTLINE

Prerequisites:

None

Course Description:

Provides instruction in the basics of network security in depth. Includes security objectives, security architecture, security models and security layers; risk management, network security policy, and security training. Includes the give security keys, confidentiality integrity, availability, accountability and auditability.

Semester Credits: 3 Lecture Hours: 3 Lab/Recitation Hours: 0



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Course Outcomes

At the completion of this course, the student should be able to:

A. Network Security Basics

- Understand computer network and information security
- Explain why network security is important
- Explain network security prevention, detection and response
- Define and explain the concept of network confidentiality
- Define and explain the concept of network integrity
- Define and explain the concept of network availability
- Define and explain the concept of network auditability
- Define and explain the component of non-repudiation
- Understand management's role in the development, implementation and maintenance of network security
- Understand the value of education, training and awareness programs to the organization
 - Understand security architecture, it's principles, components and employment.

B. Network Security Planning

- Define risk management and its role in security policy and security architecture
- Understand the relationship between risk, threats, vulnerabilities and countermeasures.
- Identify and describe risk mitigation strategies
- Define and describe Disaster Recovery Plan
- Define and describe an Incident Response Plan
- Define and describe a Business Continuity Plan
- Describe the various functions related to database security

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- Describe and understand a feasibility study

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- Understand the need for constantly evaluating the status of security management.
- Understand the difference between policies, procedures, standards and guidelines.

C. Network Security Technology

- Understand the process of encryption and define the key cryptography terms. •
Understand the difference between asymmetric and symmetric encryption
- Discuss scanning and analysis tools.
- Describe the various types of firewalls
- Describe the various types of Intrusion Detection Systems
- Understand the difference between host-based intrusion detection and network-based intrusion detection
- Describe the operation of Virtual Private Network
- Understand the importance of authentication and the characteristics of a good password •
Describe the various approaches to biometrics access control.

D. Network Security Organization

- Understand the position of the network security element within the organization
- Understand the skills required to staff the network security element
- Describe the functional elements associated with network security
- Understand the relationship between an organizations employment practices and policies and the network security function.
- Understand the position of CIRT element within the security functions.
- Explain the various credentials that can be acquired by the security professional and their value.

E. Legal, Privacy and Ethical Issues

- Identify and explain the major laws relating to network security
- Understand the issue of privacy and its impact upon the network security function
- Understand the issue of ethics and its relationship to the security function
- Understand the cultural differences related to ethics
- Understand the necessity for a code of ethics
- Understand the potential for organizational liabilitywith regard to network security

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- Understand and describe the tradeoffs security, privacy and operations.

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Required Materials:

One required textbook

Textbook:

Security and Guide to Network Security Fundamentals; Mary Ciampa; 4th edition;
ISBN: 978-1-111-64012-5

The following supplementary materials are required:

A computer with a stable broadband internet connection.

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Weekly Schedule: Topical Description (may contain timelines):

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| Week | Topics | Chapters | Assignments |
|-------------|---|-----------------|--------------------------|
| 1 | Intro to Security | 1 | Introduction |
| 2 | Malware & Social Engineering Attacks | 2 | Comparing Keyloggers |
| 3 | Application & Network Attacks | 3 | |
| 4 | Vulnerability Assessment & Mitigating Attacks | 4 | Exam 1 |
| 5 | Host Application & Data Security | 5 | Securing the Host - RFID |
| 6 | Network Security | 6 | |
| 7 | Mid Term Exam | | |
| 8 | Administering a Secure Network | 7 | Cloud Computing |
| 9 | Wireless Network Security | 8 | |
| 10 | Access Control Fundamentals | 9 | Exam 2 |
| 11 | Authentication & Account Management | 10 | |
| 12 | Basic Cryptography | 11 | |
| 13 | Advanced Cryptography | 12 | Certificate Authorities |
| 14 | Business Continuity | 13 | |

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|-----------|-----------------|----|-----------------|
| 15 | Risk Mitigation | 14 | Security Policy |
| 16 | Final Exam | | |

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