uCertify

# Course Outline

## Computer Security Fundamentals 5e

17 May 2024

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6. State of the Art Educator Tools
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## 1. Course Objective

This course is a guide for any computer-savvy person. This means system administrators who are not security experts and anyone who has a working knowledge of computers and wishes to know more about cyber crime and cyber terrorism could find this course useful. However, the core audience will be students who wish to take a first course in security but may not have a thorough background in computer networks. This course contains assessment questions, interactive lessons with knowledge checks and quizzes, and live labs to get a detailed understanding of concepts such as computer security, networks and the Internet, DoS attacks, malware, security policies, cyber terrorism, and so on.

## 2. Pre-Assessment

Pre-Assessment lets you identify the areas for improvement before you start your prep. It determines what students know about a topic before it is taught and identifies areas for improvement with question assessment before beginning the course.

## 3. Exercises

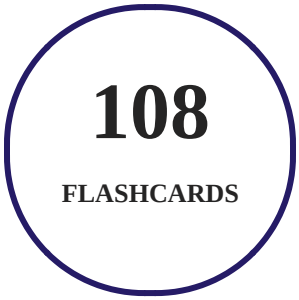
There is no limit to the number of times learners can attempt these. Exercises come with detailed remediation, which ensures that learners are confident on the topic before proceeding.

## 4. Quiz

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.

## 5. flashcards

Flashcards are effective memory-aiding tools that help you learn complex topics easily. The flashcard will help you in memorizing definitions, terminologies, key concepts, and more. There is no limit to the number of times learners can attempt these. Flashcards help master the key concepts.




## 6. Glossary of terms

uCertify provides detailed explanations of concepts relevant to the course through Glossary. It contains a list of frequently used terminologies along with its detailed explanation. Glossary defines the key terms.

## 7. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

## 8. ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

## 9. State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

## 10. Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been

recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**
    1. Best Postsecondary Learning Solution

- **2015**
    1. Best Education Solution
    2. Best Virtual Learning Solution
    3. Best Student Assessment Solution
    4. Best Postsecondary Learning Solution
    5. Best Career and Workforce Readiness Solution
    6. Best Instructional Solution in Other Curriculum Areas
    7. Best Corporate Learning/Workforce Development Solution

- **2016**
    1. Best Virtual Learning Solution
    2. Best Education Cloud-based Solution
    3. Best College and Career Readiness Solution
    4. Best Corporate / Workforce Learning Solution
    5. Best Postsecondary Learning Content Solution
    6. Best Postsecondary LMS or Learning Platform
    7. Best Learning Relationship Management Solution

- **2017**
    1. Best Overall Education Solution
    2. Best Student Assessment Solution
    3. Best Corporate/Workforce Learning Solution
    4. Best Higher Education LMS or Learning Platform

- **2018**
    1. Best Higher Education LMS or Learning Platform

2. Best Instructional Solution in Other Curriculum Areas
3. Best Learning Relationship Management Solution

- **2019**
  1. Best Virtual Learning Solution
  2. Best Content Authoring Development or Curation Solution
  3. Best Higher Education Learning Management Solution (LMS)

- **2020**
  1. Best College and Career Readiness Solution
  2. Best Cross-Curricular Solution
  3. Best Virtual Learning Solution

## 11. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

# Syllabus


### Chapter 1: Introduction

- About This eBook

### Chapter 2: Introduction to Computer Security

- Introduction
- How Seriously Should You Take Threats to Network Security?
- Identifying Types of Threats
- Assessing the Likelihood of an Attack on Your Network
- Basic Security Terminology
- Concepts and Approaches
- How Do Legal Issues Impact Network Security?
- Online Security Resources
- Summary

## Chapter 3: Networks and the Internet

- Introduction
- Network Basics
- How the Internet Works
- History of the Internet
- Basic Network Utilities
- Other Network Devices
- Advanced Network Communications Topics

- Cloud Computing
- Summary

## Chapter 4: Cyber Stalking, Fraud, and Abuse

- Introduction
- How Internet Fraud Works
- Identity Theft
- Cyber Stalking
- Protecting Yourself Against Cybercrime
- Summary

## Chapter 5: Denial of Service Attacks

- Introduction
- DoS Attacks
- Illustrating an Attack
- Common Tools Used for DoS Attacks
- DoS Weaknesses
- Specific DoS Attacks
- Real-World Examples of DoS Attacks

- How to Defend Against DoS Attacks
- Summary

## Chapter 6: Malware

- Introduction
- Viruses
- Trojan Horses
- The Buffer-Overflow Attack
- Spyware
- Other Forms of Malware
- Detecting and Eliminating Viruses and Spyware
- Summary

## Chapter 7: Techniques Used by Hackers

- Introduction
- Basic Terminology
- The Reconnaissance Phase
- Actual Attacks

- Malware Creation
- Penetration Testing
- The Dark Web
- Summary

Chapter 8: Industrial Espionage in Cyberspace

- Introduction
- What Is Industrial Espionage?
- Information as an Asset
- Real-World Examples of Industrial Espionage
- How Does Espionage Occur?
- Protecting Against Industrial Espionage
- Trade Secrets
- The Industrial Espionage Act
- Spear Phishing
- Summary

Chapter 9: Encryption

- Introduction

- Cryptography Basics
- History of Encryption
- Modern Cryptography Methods
- Public Key (Asymmetric) Encryption
- PGP
- Legitimate Versus Fraudulent Encryption Methods
- Digital Signatures
- Hashing
- MAC and HMAC
- Steganography
- Cryptanalysis
- Cryptography Used on the Internet
- Quantum Computing Cryptography
- Summary

## Chapter 10: Computer Security Technology

- Introduction
- Virus Scanners

- Firewalls
- Antispyware
- IDSs
- Digital Certificates
- SSL/TLS
- Virtual Private Networks
- Wi-Fi Security
- Summary

## Chapter 11: Security Policies

- Introduction
- What Is a Policy?
- Important Standards
- Defining User Policies
- Defining System Administration Policies
- Security Breaches
- Defining Access Control
- Development Policies

- Standards, Guidelines, and Procedures
- Disaster Recovery
- Zero Trust
- Important Laws
- Summary

## Chapter 12: Network Scanning and Vulnerability Scanning

- Introduction
- Basics of Assessing a System
- Securing Computer Systems
- Scanning Your Network
- Testing and Scanning Standards
- Getting Professional Help
- Summary

## Chapter 13: Cyber Terrorism and Information Warfare

- Introduction
- Actual Cases of Cyber Terrorism

- Weapons of Cyber Warfare
- Economic Attacks
- Military Operations Attacks
- General Attacks
- Supervisory Control and Data Acquisitions (SCADA)
- Information Warfare
- Actual Cases of Cyber Terrorism
- Future Trends
- Defense Against Cyber Terrorism
- Terrorist Recruiting and Communication
- TOR and the Dark Web
- Summary

## Chapter 14: Cyber Detective

- Introduction
- General Searches
- Company Searches
- Court Records and Criminal Checks

- Usenet
- Google
- Maltego
- Summary

## Chapter 15: Introduction to Forensics

- Introduction
- General Guidelines
- Finding Evidence on a PC
- Finding Evidence in System Logs
- Getting Back Deleted Files
- Operating System Utilities
- The Windows Registry
- Mobile Forensics: Cell Phone Concepts
- The Need for Forensic Certification
- Expert Witnesses
- Additional Types of Forensics
- Summary

## Chapter 16: Cybersecurity Engineering

- Introduction
- Defining Cybersecurity Engineering
- Standards
- SecML
- Modeling
- Summary

## Chapter 17: Appendix A: Resources

- General Computer Crime and Cyber Terrorism
- General Knowledge
- Cyber Stalking
- Identity Theft
- Port Scanners and Sniffers
- Password Crackers
- Countermeasures
- Cyber Investigation Tools
- General Tools

- Virus Research

## 12. Practice Test

### Here's what you get

| 100 | 100 |
| --- | --- |
| PRE-ASSESSMENTS QUESTIONS | POST-ASSESSMENTS QUESTIONS |

### Features

Each question comes with detailed remediation explaining not only why an answer option is correct but also why it is incorrect.

#### Unlimited Practice

Each test can be taken unlimited number of times until the learner feels they are prepared. Learner can review the test and read detailed remediation. Detailed test history is also available.

Each test set comes with learn, test and review modes. In learn mode, learners will attempt a question and will get immediate feedback and complete remediation as they move on to the next question. In test mode, learners can take a timed test simulating the actual exam conditions. In review mode, learners can read through one item at a time without attempting it.

## 13. Live Labs

The benefits of live-labs are:

- Exam based practical tasks
- Real equipment, absolutely no simulations
- Access to the latest industry technologies
- Available anytime, anywhere on any device
- Break and Reset functionality
- No hardware costs

# Lab Tasks

**Networks and the Internet**

- Using the tracert command
- Using the ping Command
- Using Routes
- Using the netstat command
- Using ARP
- Using the ipconfig Command
- Using the nslookup command for Passive Reconnaissance

**Cyber Stalking, Fraud, and Abuse**

- Performing a Phishing Attack

**Denial of Service Attacks**

- Performing DoS Attacks with an SYN Flood
- Performing a DHCP Starvation Attack
- Simulating the DDoS Attack with an SYN Flood
- Protecting Yourself from the DOS Attack

**Malware**

- Detecting Viruses using Windows Defender
- Creating a RAT
- Using eLiTeWrap

**Techniques Used by Hackers**

- Using nmap for Network Enumeration
- Cracking a Password Using the John the Ripper Tool

**Encryption**

- Creating PGP Certification
- Observing the SHA-Generated Hash Value
- Using Rainbow Tables
- Using Steganography

**Computer Security Technology**

- Configuring Snort

**Network Scanning and Vulnerability Scanning**

- Configuring Iptables to Block ICMP Packets
- Disabling a Service
- Performing an MBSA Scan

**Introduction to Forensics**

- Observing the Security Event log
- Using openfiles and net sessions
- Using the fc command
- Exporting the Registry Keys

## Here's what you get

| 29 | 29 | 46 |
|---|---|---|
| LIVE LABS | VIDEO TUTORIALS | MINUTES |

## 14. Post-Assessment

After completion of the uCertify course Post-Assessments are given to students and often used in conjunction with a Pre-Assessment to measure their achievement and the effectiveness of the exam.

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