

Computing Fundamentals

Course Overview

This 10-session course introduces you to computing, a growing and rapidly changing field that is becoming increasingly vital to business survival, job stability, and national security. Each session is approximately two hours long.

Course Approach

The content is laid out in a workshop format structured to provide a holistic learning experience leading to proficiency. This is not a self-paced course. This course also contains case study material based on real-life scenarios but does not reference any particular company or situation.

Content Types

There are three content types in this course:

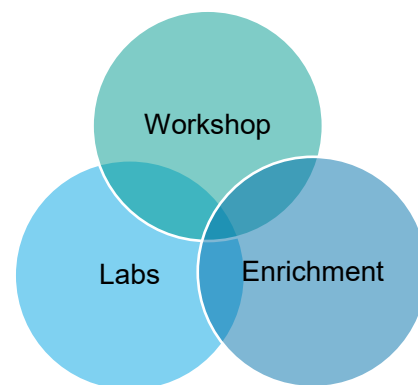
Workshop: Main course content, typically in a slide deck or recorded, lecture-style format.

Enrichment: Additional content provided for the learning experience in the course. These are items that, while not required, may provide a bigger picture or more context around content presented in the course. These are content elements including (but not limited to) learning aids, journal articles, podcasts, whitepapers, webinars or links from other trusted sources.

Labs (if available): This course has a performance-based lab component that is highly recommended for learners to complete. Completion of the labs is in addition to the instructor led course and will reinforce the learning in a hands-on, skill building approach.

The Computing Fundamentals Certificate Exam assesses and affirms both knowledge and the ability to perform IT-related tasks that the real-world workplace demands. The exam includes multiple choice questions and specific skills that are assessed in a virtual lab environment.

Access to the labs are available through the ISACA PERFORM learning experience platform.



Session 1 – Character Sets and Number Systems

Learning Objectives:

- Define basic data concepts

Session topics:

- 1.2 Introduction
- 1.3 Basic Data Concepts
- 1.3.1 Data Basics

Session 2 – Hardware Components - 1

Learning Objectives:

- Identify hardware components and technology

Session topics:

- 1.3.2 Data Input

Session 3 – Hardware Components - 2

Learning Objectives:

- Identify hardware components and technology
- Perform mathematical conversions

Session topics:

- 1.3.3 Data Storage
- 1.3.4 Data Processing
- 1.3.5 Data Output

Session 4 – Hardware Components - 3

Learning Objectives:

- Identify hardware components and technology
- Identify common computing hardware devices
- Describe differences among types of memory

Session topics:

- 1.4 Hardware Components of Computing Devices
- 1.4.1 Processors and Solid-state Electronics
- 1.4.2 Memory
- 1.4.3 Drives
- 1.4.4 Motherboard, Ports and Peripherals

Session 5 – Software Components

Learning Objectives:

- Distinguish between major operating systems

Session topics:

- 1.5 Software Components of Computing Devices
 - 1.5.1 Firmware
 - 1.5.2 Operating System Architecture
 - 1.5.3 Operating System Types
 - 1.5.4 Operating System Configuration
 - 1.5.5 Application Software

Session 6 – Data and File Systems

Learning Objectives:

- Identify common file types by their extension
- Describe the data life cycle

Session topics:

- 1.6 Data and File Systems
 - 1.6.1 File System Structure
 - 1.6.2 File Management and Permissions
 - 1.6.3 File Types
 - 1.6.4 Data Types
 - 1.6.5 Data Lifecycle

Session 7 – Networking Basics

Learning Objectives:

- Identify layers of the Open Systems Interconnection (OSI) Reference Model
- Explain the functions of OSI model layers

Session topics:

- 2.3 Networking concepts
 - 2.3.1 Open Systems Interconnection (OSI) Model

Session 8 – Network Topologies and Deployments

Learning Objectives:

- Describe network topologies.

Session topics:

- 2.3.2 Network Topology and Deployments

Session 9 – Network Communication

Learning Objectives:

- Describe common types of authentication

Session topics:

- 2.3.3 Network Protocols and Addressing

Session 10 – Network Security and Virtualization

Learning Objectives:

- Identify benefits of cloud computing
- Identify cloud deployment models
- Identify objectives of information security
- Describe characteristics of a threat landscape
- Describe functions aligned to security operations

Session topics:

- 2.4 Virtualization Concepts
- 2.5 Security Concepts

Enrichment:

- Auditing Security Risks in Virtual IT Systems, ISACA Journal, (<https://www.isaca.org/resources/isaca-journal/past-issues/2011/auditing-security-risks-in-virtual-it-systems>)
- Virtualization Desktop Infrastructure (VDI), ISACA Whitepaper, (https://www.isaca.org/bookstore/bookstore-wht_papers-digital/whpvdi)
- Virtualization: Benefits and Challenges, ISACA Whitepaper, (https://www.isaca.org/bookstore/bookstore-wht_papers-digital/whpvbc)

Practice Labs:

- Removable Drives and Data Recovery
- Users and Groups
- Files, Permissions, and Links
- Subnetting Analysis
- Windows Directories
- Network Topologies
- RAM and CPU Identification
- Shell and Navigation