

NAF Principles of Information Technology

Course Scope and Sequence

July 2021

The Principles of Information Technology course provides an overview of information technology (IT) today. For students in AOIT, it serves as the foundation for all of the core courses offered by the Academy of Information Technology. The course provides students with an introduction to hardware, looking at both peripherals and inside the box. Then, with hands-on activities, students explore the most common types of operating systems, software applications, and programming languages. Students learn about network topology, and IT issues such as security and privacy, the effects of IT on society and the individual, and technological inequality.

For their culminating project, students work in groups of three or four to design their own dream personal technology system. Each group decides what kind of system they would love to have—one designed to meet a specific set of needs. As they work through each lesson, the students analyze the hardware and software they need to put their system together. Given a \$5,000 budget, students collect and evaluate data before choosing components for their system. Finally, students create a PowerPoint presentation describing their dream technology system and present it to an audience of professionals at the end of the project.

This course is estimated to take 67 50-minute class periods.

Unit 1: Getting Started and Computer History

Lesson 1: Course Introduction

Estimated # of Class Periods: 2

Learning Objectives

- Infer the skills and knowledge about information technology needed to be successful in an authentic project
- Identify general information technology terms with which to build a taxonomy

Lesson 2: The Evolving Role of Information Technology and Computers

Estimated # of Class Periods: 3

Learning Objectives

- Identify ways that computers impact our everyday lives at home, school, and work
- Define the term *information technology*
- Explain the meaning and importance of computer literacy
- Identify early technologies that helped lead to the development of computers
- List key milestones in the development of computer technology
- Classify modern computers into primary categories
- Identify trends related to the use of IT in people's personal and professional lives
- Characterize how our society is changing because of the pervasive influence of IT

Lesson 3: Online Research Strategies

Estimated # of Class Periods: 3

Learning Objectives

- Differentiate between different types of information resources on the Internet
- Demonstrate the ability to use web browser tools to navigate and work with web pages
- Evaluate the credibility of information published on websites

Lesson 4: Staying Safe Online

Estimated # of Class Periods: 3

Learning Objectives

- Identify different kinds of computer crime
- Make generalizations about the implications of software piracy
- Display understanding of how to work and interact safely on the Internet

Unit 2: Hardware Basics

Lesson 5: Inside the Box

Estimated # of Class Periods: 5

Learning Objectives

- Characterize the main parts of a computer system and describe how they interact
- Identify the primary components inside the case of a personal computer and compare the purpose/function of each
- Display understanding of the main factors that affect the processing speed of a computer

Lesson 6: Peripherals

Estimated # of Class Periods: 3

Learning Objectives

- Identify uses and benefits of various types of input and output devices
- Describe factors that affect the image quality of monitors
- Distinguish between printer types
- Evaluate criteria for purchasing a printer
- Identify computer ports and their functions

Unit 3: Software Applications

Lesson 7: Basic Productivity Applications

Estimated # of Class Periods: 6

Learning Objectives

- Create quality documents using the basic features of word processing and spreadsheet applications
- Demonstrate the ability to apply basic productivity application tools to home, school, and work situations
- Demonstrate the ability to use cloud-based productivity applications from services such as Google Drive or Microsoft OneDrive

Lesson 8: Graphics, Multimedia, and Games

Estimated # of Class Periods: 6

Learning Objectives

- Characterize how organizations use multimedia products to shape audience impressions
- Design effective promotional and presentation materials by employing graphics and multimedia software applications
- Describe similarities and differences between computer gaming genres

Unit 4: Networks and the Internet

Lesson 9: Introduction to Networks

Estimated # of Class Periods: 3

Learning Objectives

- Compare and contrast LAN and WAN networks
- Describe the main types of computer network architecture (client/server and peer-to-peer) and explain how they operate
- Identify the main network topologies
- Identify the hardware needed to set up and operate a computer network

Lesson 10: How the Internet Works

Estimated # of Class Periods: 4

Learning Objectives

- Describe the Internet's origins and what it has become
- Describe how data packets travel across the Internet
- Display understanding of how Internet service providers operate and what role they play in enabling users to connect to the Internet

Lesson 11: Communicating over the Internet

Estimated # of Class Periods: 7

Learning Objectives

- Describe how email is routed through SMTP servers and delivered to the recipient
- Explain how the primary modes of Internet communication are used
- Demonstrate the ability to use email in a professional setting (professional email address; messages that are professional in content, tone, and construction)
- Identify the IT inequalities that exist and explain the significance of those inequalities
- Describe issues related to the digital divide and propose a solution to address them

Unit 5: Software Programming and Development

Lesson 12: Operating Systems

Estimated # of Class Periods: 4

Learning Objectives

- Differentiate between different operating systems and applications
- Compare and contrast open source and proprietary software
- Display understanding of how system utilities help maintain a computer
- Demonstrate the ability to use an OS file manager to organize data
- Evaluate criteria for selecting an operating system

Lesson 13: Introduction to Programming

Estimated # of Class Periods: 6

Learning Objectives

- Differentiate between source code, machine code, interpreters, and compilers
- Characterize the major categories of programming languages and how they are used
- Create a simple computer application program using Python
- Describe the stages in the software development life cycle and explain how to implement them successfully

Unit 6: Careers and Information Technology

Lesson 14: Working in Information Technology

Estimated # of Class Periods: 4

Learning Objectives

- List the types of jobs that are available in the IT field
- Describe entry-level jobs in IT and corresponding qualifications

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- Evaluate which jobs are most suitable based on personal interests and skills
- Evaluate personal experience and qualifications for potential employment opportunities
- Develop a resume

Lesson 15: Project Presentation and Course Closure

Estimated # of Class Periods: 8

Learning Objectives

- Plan a cost-effective personal technology system that is designed for a specific set of needs
- Compare and contrast different models of computer hardware and software components and propose a solution that incorporates the best-suited model of each component
- Demonstrate the ability to give a professional presentation
- Evaluate personal experience and performance in the course
- Summarize key learning across the whole subject of information technology