ITT Technical Institute

TB143

Introduction to Personal Computers

Onsite and Online Course

SYLLABUS

Credit hours: 4

Contact/Instructional hours: 50 (30 Theory Hours, 20 Lab Hours)

Prerequisite(s) and/or Corequisite(s):

None.

Course Description:

Organization of a typical Personal Computer (PC) is examined in a given popular operating systems environment. Terminology and concepts related to major PC hardware components and their functions will be discussed consistent with industry standards and practices.

COURSE SUMMARY

COURSE DESCRIPTION

Organization of a typical Personal Computer (PC) is examined in a given popular operating systems environment. Terminology and concepts related to major PC hardware components and their functions will be discussed consistent with industry standards and practices.

MAJOR INSTRUCTIONAL AREAS

1. Computer History and Fundamentals
2. Hardware
3. Operating Systems
4. Basic Networking
5. Basic Security
6. Software
7. Basic Programming
8. Web Technologies
9. Troubleshooting

COURSE LEARNING OBJECTIVES

By the end of this course, you should be able to:

1. Identify the evolution of computers and different types of computers.
2. Convert numbers between binary, decimal, and hexadecimal number systems.
3. Explain the purpose, functions, and characteristics of a CPU.
4. Describe the physical components of a computer and various input and output devices, including storage and memory.
5. Describe the function of BIOS and the booting process of a computer.
6. Describe basic operating system architecture, its components, and storage management.
7. Describe basic types of computer network topologies and connections, protocols, and services used on the Internet.
8. Describe virtual computing and virtual networking concepts.
9. Describe fundamental cloud computing architectures and services.

10. Apply basic computer security measures by using authentication and access control.
11. Explain the basics of program algorithms and scripts used for software application development.
12. Apply basic programming and scripting methodology to create basic programs and web pages.
13. Troubleshoot common computer problems using a structured approach.

COURSE OUTLINE

MODULE 1: INTRODUCTION TO COMPUTERS

COURSE LEARNING OBJECTIVES COVERED

- Identify the evolution of computers and different types of computers.
- Convert numbers between binary, decimal, and hexadecimal number systems.

TOPICS COVERED

- History of Computers
- System Components
- Numbering Systems Used in Computers
- Basic Boolean Operations
- Motherboard Components

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Prowse, Foote, Ballard, & Moncur, Chapters 1–3.	No	6 hr
Lesson: Study the lesson for this module.	No	1 hr
Exercise: Submit the exercise titled "Converting Numbers to Various Numbering Systems."	Yes	1 hr
Lab: Complete the lab titled "What's in Your Computer?"	Yes	N/A
Practice Quiz: Prepare for Practice Quiz 1.	No	1 hr
Practice Quiz: Take Practice Quiz 1.	No	N/A

Total Out-Of-Class Activities: 9 Hours

MODULE 2: CPU AND I/O DEVICES

COURSE LEARNING OBJECTIVES COVERED

- Explain the purpose, functions, and characteristics of a CPU.
- Describe the physical components of a computer and various input and output devices, including storage and memory.

TOPICS COVERED

- Central Processing Unit (CPU) Operation and Technology
- Random-Access Memory (RAM) Basics, Types, and Technologies
- Drive Storage Technology
- Input/Output (I/O) Ports and Devices

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Prowse, Foote, Ballard, & Moncur, Chapters 4–6.	No	12 hr
Lesson: Study the lesson for this module.	No	2.5 hr
Discussion: Participate in the discussion titled "CPU Technology Developments."	Yes	1 hr
Quiz: Prepare for Quiz 1.	No	1 hr
Quiz: Take Quiz 1.	Yes	N/A
Exercise: Submit the exercise titled "I/O Devices."	Yes	2 hr
Lab: Complete the lab titled "Desktop and Mobile Processor Characteristics."	Yes	N/A
Practice Quiz: Prepare for Practice Quiz 2.	No	1 hr
Practice Quiz: Take Practice Quiz 2.	No	N/A

Total Out-Of-Class Activities: 19.5 Hours

MODULE 3: COMPUTER OPERATION AND OPERATING SYSTEMS

COURSE LEARNING OBJECTIVES COVERED

- Describe the function of BIOS and the booting process of a computer.
- Describe basic operating system architecture, its components, and storage management.

TOPICS COVERED

- Basic Input/Output System (BIOS), Complementary Metal-Oxide Semiconductor (CMOS), and Firmware
- Power-On Self-Test (POST) and Error Reporting
- Mobile and Desktop Operating Systems
- Different Versions of Windows
- Operating System Architecture
- Managing Disk Partitions, File Systems, and Folders
- Operating System Management Tools

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Prowse, Foote, Ballard, & Moncur, Chapters 7–9.	No	9 hr
Lesson: Study the lesson for this module.	No	2.5 hr
Discussion: Participate in the discussion titled "Operating Systems."	Yes	1 hr
Quiz: Prepare for Quiz 2.	No	1 hr
Quiz: Take Quiz 2.	Yes	N/A
Exercise: Submit the exercise titled "Windows Operating System."	Yes	2 hr
Lab: Complete the lab titled "Operating System Management Utilities."	Yes	N/A
Practice Quiz: Prepare for Practice Quiz 3.	No	1 hr
Practice Quiz: Take Practice Quiz 3.	No	N/A

Total Out-Of-Class Activities: 16.5 Hours

MODULE 4: COMPUTER NETWORK, VIRTUALIZATION, AND SECURITY

COURSE LEARNING OBJECTIVES COVERED

- Describe basic types of computer network topologies and connections, protocols, and services used on the Internet.
- Describe virtual computing and virtual networking concepts.
- Describe fundamental cloud computing architectures and services.
- Apply basic computer security measures by using authentication and access control.

TOPICS COVERED

- Types of Computer Networks
- Network Devices
- Wired and Wireless Network Connections
- Transmission Control Protocol/Internet Protocol (TCP/IP) Suite of Protocols
- Internet Connectivity Technologies
- Virtual and Cloud Computing
- Data and Physical Security
- Access Control Purposes and Principles

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Prowse, Foote, Ballard, & Moncur, Chapters 10–12.	No	9 hr
Lesson: Study the lesson for this module.	No	2.5 hr
Discussion: Participate in the discussion titled "Security Basics."	Yes	1 hr
Quiz: Prepare for Quiz 3.	No	1 hr
Quiz: Take Quiz 3.	Yes	N/A
Exercise: Submit the exercise titled "Virtual and Cloud Computing."	Yes	2 hr
Lab: Complete the lab titled "Cloud Services."	Yes	N/A
Practice Quiz: Prepare for Practice Quiz 4.	No	1 hr
Practice Quiz: Take Practice Quiz 4.	No	N/A

Total Out-Of-Class Activities: 16.5 Hours

MODULE 5: INTRODUCTION TO PROGRAMMING AND THE INTERNET

COURSE LEARNING OBJECTIVES COVERED

- Describe basic types of computer network topologies and connections, protocols, and services used on the Internet.
- Apply basic computer security measures by using authentication and access control.
- Explain the basics of program algorithms and scripts used for software application development.
- Apply basic programming and scripting methodology to create basic programs and web pages.

TOPICS COVERED

- Programming with Text Editors
- Basic HyperText Markup Language (HTML) and JavaScript
- Software Development Life Cycle
- Introduction to Basic Programming and Popular Programming Languages
- Compiled vs. Interpreted Languages
- Basic HTML and HyperText Transfer Protocol (HTTP) Communications

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Prowse, Foote, Ballard, & Moncur, Chapters 13–15.	No	4.5 hr
Reading: ITT Tech Virtual Library> Basic Search> • *JavaScript Essentials*> o Seven JavaScript Things I Wish I Knew Much Earlier in My Career o Lessons from a Review of JavaScript Code o Find the Right JavaScript Solution with a 7-Step Test o Ten Oddities and Secrets About JavaScript o The Seven Deadly Sins of JavaScript Implementation	No	1.5 hr
Lesson: Study the lesson for this module.	No	2.5 hr
Discussion: Participate in the discussion titled "Desktop and Mobile Application Programming Languages."	Yes	1 hr
Quiz: Prepare for Quiz 4.	No	1 hr

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Quiz: Take Quiz 4.	Yes	N/A
Exercise: Submit the exercise titled "Basic Internet Programming."	Yes	2 hr
Lab: Complete the lab titled "Creating Programs and Scripts."	Yes	N/A
Practice Exam: Prepare for the practice exam.	No	5 hr
Practice Exam: Take the practice exam.	No	N/A

Total Out-Of-Class Activities: 17.5 Hours

MODULE 6: BASICS OF WEB PAGE AND COMPUTER TROUBLESHOOTING

COURSE LEARNING OBJECTIVES COVERED

- Identify the evolution of computers and different types of computers.
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- Describe the physical components of a computer and various input and output devices, including storage and memory.
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- Describe basic operating system architecture, its components, and storage management.
- Describe basic types of computer network topologies and connections, protocols, and services used on the Internet.
- Describe virtual computing and virtual networking concepts.
- Describe fundamental cloud computing architectures and services.
- Apply basic computer security measures by using authentication and access control.
- Explain the basics of program algorithms and scripts used for software application development.
- Apply basic programming and scripting methodology to create basic programs and web pages.
- Troubleshoot common computer problems using a structured approach.

TOPICS COVERED

- Basic HTML Tags
- Basic Web Page Design
- Simple HTML Forms
- Basic PC Repair Procedures and Tools
- High-Level Troubleshooting in the Desktop and Mobile Environments

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Prowse, Foote, Ballard, & Moncur, Chapters 16–17.	No	4 hr
Lesson: Study the lesson for this module.	No	2 hr
Lab 1: Complete the lab titled “Basics of Troubleshooting.”	Yes	N/A
Lab 2: Complete the lab titled “Create a Web Page.”	Yes	N/A
Final Exam: Prepare for the final exam.	No	5 hr
Final Exam: Take the final exam.	Yes	N/A

Total Out-Of-Class Activities: 11 Hours

EVALUATION AND GRADING

EVALUATION CRITERIA

The graded assignments will be evaluated using the following weighted categories:

CATEGORY	WEIGHT
Discussion	10%
Lab	30%
Exercise	30%
Quiz	10%
Final Exam	20%
TOTAL	100%

GRADE CONVERSION

The final grades will be calculated from the percentages earned in the course, as follows:

GRADE		PERCENTAGE
A	(4.0)	90–100%
B+	(3.5)	85–89%
B	(3.0)	80–84%
C+	(2.5)	75–79%
C	(2.0)	70–74%
D+	(1.5)	65–69%
D	(1.0)	60–64%
F	(0.0)	<60%

LEARNING MATERIALS AND REFERENCES

REQUIRED RESOURCES

COMPLETE TEXTBOOK PACKAGE

- Prowse, D., Foote, S., Ballard, P., & Moncur, M. (2015). *Introduction to technology concepts (Custom ed.). Boston, MA: Pearson Custom.*

OTHER ITEMS

- MS Office 2003 or later

RECOMMENDED RESOURCES

- Books and Professional Journals
  - Mueller, Scott. (2010). *Upgrading and Repairing PCs. Pearson Education, Inc.*
- Professional Associations
  - Association of Information Technology Professionals https://www.aitp.org (accessed October 5, 2015)
  - IEEE Computer Society http://www.computer.org/web/guest (accessed October 5, 2015)
- ITT Tech Virtual Library (accessed via Student Portal | https://studentportal.itt-tech.edu)
  - Basic Search>
    - Osmani, A. (2012). *JavaScript essentials*. Freiburg, Germany: Smashing Media GmbH.
  - School of Study> School of Information Technology> Tutorial Links>
    - Computer Science Tutorials
    - TechTutorials
- Other References
  - CompTIA Certifications http://certification.comptia.org/home.aspx (accessed October 5, 2015)

INSTRUCTIONAL METHODS AND TEACHING STRATEGIES

The curriculum employs a variety of instructional methods that support the course objectives while fostering higher cognitive skills. These methods are designed to encourage and engage you in the learning process in order to maximize learning opportunities. The instructional methods include but are not limited to lectures, collaborative learning options, use of technology, and hands-on activities.

To implement the above-mentioned instructional methods, this course uses several teaching strategies, such as hands-on labs and lessons. Your progress will be regularly assessed through a variety of assessment tools including labs, discussions, exercises, quizzes, and a final exam.

OUT-OF-CLASS WORK

For purposes of defining an academic credit hour for Title IV funding purposes, ITT Technical Institute considers a quarter credit hour to be the equivalent of: (a) at least 10 clock hours of classroom activities and at least 20 clock hours of outside preparation; (b) at least 20 clock hours of laboratory activities; or (c) at least 30 clock hours of externship, practicum or clinical activities. ITT Technical Institute utilizes a “time-based option” for establishing out-of-class activities which would equate to two hours of out-of-class activities for every one hour of classroom time. The procedure for determining credit hours for Title IV funding purposes is to divide the total number of classroom, laboratory, externship, practicum and clinical hours by the conversion ratios specified above. A clock hour is 50 minutes.

A credit hour is an artificial measurement of the amount of learning that can occur in a program course based on a specified amount of time spent on class activities and student preparation during the program course. In conformity with commonly accepted practice in higher education, ITT Technical Institute has institutionally established and determined that credit hours awarded for coursework in this program course (including out-of-class assignments and learning activities described in the “Course Outline” section of this syllabus) are in accordance with the time-based option for awarding academic credit described in the immediately preceding paragraph.

ACADEMIC INTEGRITY

All students must comply with the policies that regulate all forms of academic dishonesty or academic misconduct. For more information on the academic honesty policies, refer to the Student Handbook and the School Catalog.

INSTRUCTOR DETAILS

Instructor Name	
Office Hours	
Contact Details	

(End of Syllabus)