HOSTOS COMMUNITY COLLEGE

DEPARTMENT OF MATHEMATICS and COMPUTER SCIENCE

COURSE: CST 140 Introduction to Computer Hardware

Credit Hours: 3.0

Equated Hours: 3.0

Class Hours: 3.0

Prerequisite: ESL 86 – 88 or ESL 91 or higher, or ENG 100 or higher and CUNY Proficiency Index

Corequisite: MAT150

Course Description:

This is an intermediate-level course designed for students preparing for A+ certification. The course aims to equip students with the essential knowledge and skills required to successfully obtain the CompTIA A+ certification. Students will learn how to install, configure, upgrade, and replace computer system components. They will also gain expertise in troubleshooting processors, memory, storage devices, adapter cards, peripherals, and other system components. Additionally, the course covers the installation, configuration, and troubleshooting of operating systems, laptops, portable devices, printers, scanners, network devices, security measures, and virtualization and cloud computing. Furthermore, students will develop the ability to provide professional IT support and customer service. Topics covered include hardware fundamentals, operating systems, networking, security, and troubleshooting. Through a blend of lectures, hands-on labs, and practice exams, students will be well-prepared to tackle the CompTIA A+ certification at the end of the course.

Required Textbook:

CompTIA A++ Guide to Information Technology Technical Support 11th Edition

Grading Standards:

Labs	30%
Two Quizzes (10% each)	20%
Group Project /Discussion	20%
Board/Participation in Class	10%
Final Exam	20%
Total	100%

Instructional and Performance Objectives:

1. Introduce students to the technical vocabulary of computer science.
2. Understand the blueprint of the architecture of the computer
3. Explain the hardware concepts of small and large computers.
4. Students will demonstrate how computers are designed and how computers function.
5. The students will learn the fundamentals of computer systems.
6. Familiarize students with the most common operating system.

Discussion: All students are encouraged to actively participate and engage on Blackboard.
Here's how you can earn points:

- Ask a Thoughtful Question:

- Pose a question related to our current module or any topic discussed in class. Make it insightful and encourage your peers to share their perspectives.
- Answer a Peer's Question:

- Once you've posted your question, take the opportunity to answer a question from one of your classmates. Share your knowledge and contribute to the collaborative learning environment we're fostering.

Students learning outcomes:

1. Students will achieve expertise in disassembling desktop and laptop computers, prioritizing safety and proficient tool usage, including understanding motherboards, recognizing their types, Intel/AMD chipsets, configuring BIOS/UEFI, and showcasing proficiency in selecting, installing, and replacing hardware.

2. The student will master diverse processor types, selecting and installing processors with best practices. Proficiency extends to memory technologies, including DIMM and SO-DIMM, and practical skills in assessing, selecting, and installing memory modules for desktops and laptops.

3. The student will demonstrate the ability to troubleshoot and restore computer systems.

4. Demonstrate adept handling of hard drives, diverse storage devices, and I/O components, covering selection, installation, hardware RAID setup, troubleshooting, and understanding various storage technologies, along with mastering basic principles, wired and wireless connection standards, connectors, ports, peripheral devices, adapter cards, video subsystem support, and troubleshooting techniques.

5. The student will demonstrate proficiency in networking, covering TCP/IP and Windows networking, addressing schemes, OSI models, server applications, protocols, TCP/UDP delivery, network hardware, local setup, IoT integration, Wi-Fi networking, and cloud computing deployment models.

6. The student will demonstrate proficiency in supporting mobile devices, acquiring knowledge of operating systems, wireless connections, device ports, accessories, business applications, configuring, troubleshooting, including malware removal, and addressing common problems.

7. The student will demonstrate printer support proficiency, encompassing knowledge of types, Windows-based management, successful installation, effective maintenance, and troubleshooting common issues.

COURSE OUTLINE

The schedule is subject to modification at the discretion of the instructor, and any alterations will be communicated either in class or through Blackboard. It is the students' responsibility to make any changes to this schedule as announced. It is strongly recommended that students check their HOSTOS email, Cengage, and Blackboard daily for crucial course-related emails and reach out to the instructor. PLEASE NOTE: Be aware that despite efforts to maintain the proposed schedule and keep students informed of changes, adjustments may occur with or without notice (including, but not limited to: test dates, times, course material coverage, and the nature and complexity of exams or assessments). Students are urged to monitor Blackboard and Cengage/MindTap regularly for course-related announcements and changes.

Weeks	Topic	Modules (See Textbooks)
Week 1	**Computer architecture: Introduction to Laptop Components**	Module 1
	Working Inside a Laptop	
Week 2	**Motherboard Types and Features Recognition**	Module 2
	Using BIOS/UEFI Setup to Configure a Motherboard	

	Updating Motherboard Drivers and BIOS/UEFI	
Week 3	**Supporting Processors and Upgrading Memory**	Module 3
	Types and Characteristics of Processors	
	Memory Technologies	
	How to Upgrade Memory	
Week 4	**Power supplies and troubleshooting computer problems**	Module 4
	Cooling Methods and Devices	
	Selecting a Power Supply	
	Strategies to Troubleshoot Any Computer Problem	
	Troubleshooting the Electrical System	
	Troubleshooting the Motherboard, Processor, and RAM	
Week 5	**Supporting Hard Drives and Other Storage Devices**	Module 5
	Hard Drive Technologies and Interface Standards	
	How to Select and Install Hard Drives	
	Troubleshooting Hard Drives	
	Supporting Other Types of Storage Devices	
Week 6	**Supporting I/O Devices**	Module 6
	Basic Principles for Supporting I/O Devices	
	Identifying and Installing I/O Peripheral Devices	
	Installing and Configuring Adapter Cards	
	Supporting the Video Subsystem	
	Troubleshooting I/O Devices	
Week 7	**Networking Fundamentals**	Module 7
	Understanding TCP/IP and Windows Networking	
	Network Hardware	
	Local Network Setup and Configuration	
Week 8	**Network Infrastructure and Cloud Computing**	Module 8
	Types of Networks and Network Connections	

	Identifying Network Hardware and Infrastructure	
	Configuring Network Infrastructure	
	Troubleshooting Network Connections	
	Client-Side Virtualization	
	Cloud Computing	
Week 9	**Supporting Mobile Devices**	Module 9
	Mobile Devices, Operating Systems, Connections, and Accessories	
	Mobile Apps for Business Use	
	Troubleshooting Mobile Devices	
Week 10	**Supporting Printers**	Module 10
	Printer Types and Features	
	Using Windows to Install, Share, and Manage Printers	
	Printer Maintenance	
	Troubleshooting Printers	
Week 11	Revision	See lab practice and Manual exercice
Week 12	Labs and practice	Revision and Final preparation
	Revision	
Week 13	Final Review	
Week 14	Final Exam	All chapter seen in class