

## TEC-50 – Computer Technician Professional with CompTIA A+ Certificate Program with Externship

### Professional Education Course Syllabus

**Program includes National Certification & an Externship Opportunity**

**Course Contact Hours: 100**

#### The Computer Technician Professional

Computer Technology Industry Association (CompTIA) A+ training offers a standard competency for entry-level service technicians in the computer industry. Earning CompTIA A+ Certification means that an individual possesses the knowledge, skills and customer service skills necessary to be a successful computer service technician offering a nationally-recognized and industry-recognized credential for new entrants into the field. Indeed, CompTIA A+ certification is the most widely-recognized certifications available across the IT industry.

#### The Computer Technician Professional CompTIA A+ Program

The CompTIA A+ course will build upon students' existing user-level knowledge and experience with personal computer software and hardware in order to present fundamental concepts and techniques that technicians will use every day on the job. Upon completing this course, students will gain the essential skills and technical expertise necessary to install, upgrade, configure, troubleshoot, optimize, repair and perform preventative maintenance on basic personal computer hardware and operating systems. The CompTIA A+ course provides students with the basic knowledge and skills necessary for a career in PC support. The course is designed to fully prepare students to sit for and pass the CompTIA A+ 220-801 and 220-802 certification exams. Course topics include installation, configuration, preventative maintenance of PC hardware components, and the basics of networking, security, virtualization, desktop imaging, and deployment. Students will also gain knowledge of diagnostic and troubleshooting processes for various types of technical issues.

#### Education and National Certifications

- Students should have or be pursuing a high school diploma or GED.
- There are no state approval and/or state requirements associated with this program.
- There are several National Certification exams that are available to students who successfully complete this program:
  - **CompTIA A+ Certification Exams (220-801 and 220-802)**
  - **Microsoft Office Specialist (MOS) Certification Exam.**

#### Program Objectives

At the conclusion of this program, students will be able to:

- Describe the common features of PC hardware found on desktop and laptop computers
- Explain network hardware, protocols, and how to build a network
- Identify unique features and concerns specific to laptop computers
- Describe the printing process, installation, and maintenance common printer types

- Describe IT support operational procedures in a workplace
- Explain the features, tools, and installation options of Windows Operating Systems
- Identify the components of Windows Operating Systems networking, preventative maintenance, security settings, and virtualization
- Describe common security threats and security-breach prevention methods
- Explain the network setup, security, and synchronization of mobile devices
- Describe the diagnostic and troubleshooting processes for hardware, software, networking, and security issues
- Use Microsoft Office

### **National Certification**

Upon successful completion of this program, students would be eligible to sit for the CompTIA A+ Certification Exams from CompTIA® and the Microsoft Office Specialist (MOS) exam. Although there are no state approval, state registration or other state requirements for this program, students who complete this program will be prepared and are eligible to sit for this national certification exam. Students who complete this program are encouraged to complete the externship option with their program. Students who complete this program can and do sit for the MOS national certification exams and are qualified, eligible and prepared to do so.

### **Externship / Hands on Training / Practicum**

Although not a requirement, once students complete the program, they have the ability to participate in an externship and/or hands on practicum so as to practice the skills necessary to perform the job requirements of a professional in this field. Students will be assisted with completing a resume and/or other requirements necessary to work in this field. All students who complete this program are eligible to participate in an externship and will be placed with a participating organization near their location.

### **Computer Technician Professional with CompTIA A+ Program Detailed Student Objectives:**

#### **HARDWARE: PART 1**

- Explain how to access, configure, and apply BIOS settings
- Explain motherboard components, their purposes, and properties
- Describe various CPU types and features
- Describe appropriate cooling methods
- Compare RAM types and features
- Describe the function of RAM
- Explain how to install and configure expansion cards
- Explain how to install and configure storage devices and use appropriate media

#### **HARDWARE PART 2**

- Describe various connection interfaces and their purposes
- Identify connector types and associated cables
- Describe various power supply types
- Describe the components needed for a custom configuration to meet customer specifications or needs
- Describe various display devices and their features
- Describe how to install and configure various peripheral devices

## **NETWORKING**

- Identify types of network cables and connectors
- Categorize characteristics of connectors and cabling
- Explain properties and characteristics of TCP/IP
- Explain common TCP and UDP ports, protocols, and their purpose
- Compare wireless networking standards and encryption types
- Explain how to install, configure, and deploy a SOHO wireless/wired router using appropriate settings
- Compare Internet connection types and features
- Identify various types of networks
- Compare network devices, their functions, and features
- Describe various networking tools

## **LAPTOPS**

- Describe laptop expansion options
- Explain how to remove and replace laptop hardware and components
- Describe components within the display of a laptop
- Explain features specific to laptops

## **PRINTERS AND OPERATIONAL PROCEDURES**

- Explain the differences between the various printer types
- Summarize the imaging process for printers
- Explain how to install and configure printers
- Explain how to perform printer maintenance
- Identify appropriate safety procedures when repairing a system
- Explain environmental impacts and the purpose of environmental controls
- Describe proper communication and professionalism given a scenario
- Explain the fundamentals of dealing with prohibited content/activity

## **OPERATING SYSTEMS**

- Compare the features and requirements of various Microsoft Operating Systems
- Explain how to install and configure the operating system using the most appropriate method given a scenario
- Use appropriate command-line tools given a scenario
- Use appropriate operating system features and tools given a scenario
- Identify Control Panel utilities to use given a scenario
- Explain how to setup and configure Windows networking on a client/desktop
- Describe how to perform preventive maintenance procedures using appropriate tools
- Explain the differences among basic OS security settings
- Explain the basics of client-side virtualization

## **SECURITY**

- Describe how to apply and use common prevention methods
- Describe common security threats
- Explain how to implement security best practices to secure a workstation
- Explain how to use the appropriate data destruction/disposal method given a scenario
- Explain how to secure a SOHO wireless network given a scenario
- Explain how to secure a SOHO wired network given a scenario

## **MOBILE APPLICATIONS**

- Explain the basic features of mobile operating systems
- Describe how to establish basic network connectivity and configure email
- Compare and contrast methods for securing mobile devices
- Compare and contrast hardware differences in regards to tablets and laptops
- Explain how to execute and configure mobile device synchronization

## **TROUBLESHOOTING – PART 1**

- Explain the troubleshooting theory given a scenario
- Explain how to troubleshoot common problems related to motherboards, RAM, CPU, and power with appropriate tools given a scenario
- Explain how to troubleshoot hard drives and RAID arrays with appropriate tools given a scenario
- Describe how to troubleshoot common video and display issues given a scenario
- Explain how to troubleshoot wired and wireless networks with appropriate tools given a scenario

## **TROUBLESHOOTING - PART 2**

- Explain how to troubleshoot operating system problems with appropriate tools
- Explain how to troubleshoot common security issues with appropriate tools and best practices given a scenario
- Explain how to troubleshoot and repair common laptop issues while adhering to the appropriate procedures
- Explain how to troubleshoot printers with appropriate tools given a scenario

## **Microsoft Office**

- Use an integrated software package, specifically the applications included in the Microsoft Office suite
- Demonstrate marketable skills for enhanced employment opportunities
- Describe proper computer techniques for designing and producing various types of documents
- Demonstrate the common commands & techniques used in Windows desktop
- List the meaning of basic PC acronyms like MHz, MB, KB, HD and RAM
- Use WordPad and MSWord to create various types of documents
- Create headings and titles with Word Art
- Create and format spreadsheets, including the use of mathematical formulas
- Demonstrate a working knowledge of computer database functions, including putting, processing, querying and outputting data
- Define computer terminology in definition matching quizzes
- Use the Windows Paint program to alter graphics
- Use a presentation application to create a presentation with both text and graphics
- Copy data from one MS Office application to another application in the suite
- Use e-mail and the Internet to send Word and Excel file attachments
- Demonstrate how to use the Windows Taskbar and Windows Tooltips
- Explain how copyright laws pertain to data and graphics posted on the Internet
- Take the college computer competency test after course completion
- Follow oral and written directions and complete assignments when working under time limitations

## Fresno Pacific University Student Learning Outcomes (FPU-SLO)

FPU-SLO 1	<b>Student Learning Outcomes Oral Communication:</b> Students will <i>exhibit</i> clear, engaging, and confident oral communication – in both individual and group settings – and will critically <i>evaluate</i> content and delivery components.
FPU-SLO 2	<b>Written Communication:</b> Students will <i>demonstrate</i> proficient written communication by <i>articulating</i> a clear focus, <i>synthesizing</i> arguments, and utilizing standard formats in order to <i>inform</i> and <i>persuade</i> others.
FPU-SLO 3	<b>Content Knowledge:</b> Students will <i>demonstrate</i> comprehension of content-specific knowledge and the ability to apply it in theoretical, personal, professional, or societal contexts.
FPU-SLO 4	<b>Reflection:</b> Students will <i>reflect</i> on their personal and professional growth and <i>provide evidence</i> of how such reflection is utilized to manage personal and vocational improvement.
FPU-SLO 5	<b>Critical Thinking:</b> Students will <i>apply</i> critical thinking competencies by <i>generating</i> probing questions, <i>recognizing</i> underlying assumptions, <i>interpreting</i> and <i>evaluating</i> relevant information, and <i>applying</i> their understandings to new situations.
FPU-SLO 6	<b>Moral Reasoning:</b> Students will <i>identify</i> and <i>apply</i> moral reasoning and ethical decision-making skills, and <i>articulate</i> the norms and principles underlying a Christian world-view.
FPU-SLO 7	<b>Service:</b> Students will <i>demonstrate</i> service and reconciliation as a way of leadership.
FPU-SLO 8	<b>Cultural and Global Perspective:</b> Students will <i>identify</i> personal, cultural, and global perspectives and will employ these perspectives to <i>evaluate</i> complex systems.
FPU-SLO 9	<b>Quantitative Reasoning:</b> Students will accurately <i>compute</i> calculations and symbolic operations and <i>explain</i> their use in a field of study.
FPU-SLO 10	<b>Information Literacy:</b> Students will <i>identify</i> information needed in order to fully understand a topic or task, <i>explain</i> how that information is organized, <i>identify</i> the best sources of information for a given enquiry, <i>locate</i> and critically <i>evaluate</i> sources, and accurately and effectively <i>share</i> that information.

## Continuing Education Student Learning Outcomes (CE-SLO)

CE-SLO 1	Demonstrate proficient written communication by articulating a clear focus, synthesizing arguments, and utilizing standard formats in order to inform and persuade others, and present information applicable to targeted use.
CE-SLO 2	Demonstrate comprehension of content-specific knowledge and the ability to apply it in theoretical, personal, professional, or societal contexts.
CE-SLO 3	Reflect on their personal and professional growth and provide evidence of how such reflection is utilized to manage personal and professional improvement.
CE-SLO 4	Apply critical thinking competencies by generating probing questions, recognizing underlying assumptions, interpreting and evaluating relevant information, and applying their understandings to the professional setting.
CE-SLO 5	Reflect on values that inspire high standards of professional and ethical behavior as they pursue excellence in applying new learning to their chosen field.

CE-SLO 6	Identify information needed in order to fully understand a topic or task, organize that information, identify the best sources of information for a given enquiry, locate and critically evaluate sources, and accurately and effectively share that information.
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