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**Syllabus**

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| **Course Title: Computer Maintenance I** | **Course Number** (If applicable): CMPT1405A | |
| **COURSE DESCRIPTION:**  This course is an in-depth exposure to computer hardware, networking, and soft skills. Students learn the functionality of hardware components as well as suggested best practices in maintenance, and safety issues. Through hands on activities and labs, students learn how to purchase and assemble a computer, apply an IP addressing scheme, connect the computer to a wireless local area network, and soft skills/customer service. Students will review the objectives covered on the CompTIA A+ certification – Exam #1. | | |
| **PREREQUISITES:**  Knowledge of computer components, peripherals, and how they work together.  Knowledge of Windows XP, Vista, and 7 operating systems. | | |
| **REQUIRED MATERIALS:**   * Components to build a computer:   + Motherboard   + Processor   + Heat sink   + RAM   + Hard drive   + Optical drive   + Power supply   + Case   + Monitor   + Keyboard   + Mouse   + Appropriate cables * Wireless router or access point | | |
| **ADDITIONAL RESOURCES** (if applicable): *All-in-One CompTIA A+ Certification Exam Guide, 8th Ed. (2012 Objectives)*, Mike Meyers, McGraw-Hill, 2012, ISBN# 978-0071-795128 (Paid) <http://certification.comptia.org/getCertified/certifications/a.aspx>  <http://www.examforce.com/offer/free-comptia-aplus-examprep?sid=1548>  <http://www.practicequiz.com/CompTIA-220-801-Certification-Practice-Test> | | |
| **LEARNING OUTCOMES/COMPETENCIES:**  Student will be able to:  1.1 Configure and apply BIOS settings  1.2 Differentiate between motherboard components, their purpose, and properties  1.3 Compare and contrast RAM types and features  1.4 Install and configure expansion cards  1.5 Install and configure storage devices and use appropriate media  1.6 Differentiate among various CPU types and features and select the appropriate cooling method  1.7 Compare and contrast various connection interfaces and explain their purpose  1.8 Install an appropriate power supply based on a given scenario  1.9 Evaluate and select appropriate components for a custom configuration, to meet customer specifications or needs  1.10 Given a scenario, evaluate types and features of display devices  1.11 Identify connector types and associated cables  1.12 Install and configure various peripheral devices  2.1 Identify types of network cables and connectors  2.2 Categorize characteristics of connectors and cabling  2.3 Explain properties and characteristics of TCP/IP  2.4 Explain common TCP and UDP ports, protocols, and their purpose  2.5 Compare and contrast wireless networking standards and encryption types  2.6 Install, configure, and deploy a SOHO wireless/wired router using appropriate settings  2.7 Compare and contrast Internet connection types and features  2.8 Identify various types of networks  2.9 Compare and contrast network devices, their functions, and features  2.10 Given a scenario, use appropriate networking tools  3.1 Install and configure laptop hardware components  3.2 Compare and contrast the components within the display of a laptop  3.3 Compare and contrast laptop features  4.1 Explain the differences between the various printer types and summarize the associated imaging process  4.2 Given a scenario, install, and configure printers  4.3 Given a scenario, perform printer maintenance  5.1 Given a scenario, use appropriate safety procedures  5.2 Explain environmental impacts and the purpose of environmental controls  5.3 Given a scenario, demonstrate proper communication and professionalism  5.4 Explain the fundamentals of dealing with prohibited content/activity | | |
| **COURSE ASSESSMENT:**  The course content, PowerPoints, study guides, and hands-on-labs will prepare students for the CompTIA A+ Exam #1. Module tests, and exams are scheduled weekly throughout the course. Assignments, labs, and supplementary material are included with the course.  **Grading Scale**   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | **Category** | **Weight** | | Module Tests | 30% | | Homework/Study Guides | 10% | | Labs | 20% | | Mid-term and Final Exams | 40% | | **Final Grade** | **100%** | | |  |  | | --- | --- | | **Percentage** | **Grade** | | 90%-100% | A | | 80%-89% | B | | 70%-89% | C | | 60%-69% | D | | 0%-59% | F | |   The grading scale is administered equally to all students in the course. Do not expect to receive a grade higher than what you earn based on your total points. No point adjustments will be made for such things as class participation or other subjective factors. | |

**COURSE SCHEDULE:**

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| **Module/**  **Lesson** | **Module/Lesson Title & description** (if applicable) | **Learning Outcomes**  Students will be able to: | **Assignment** |
| 1 | Form Factors, Cases, and Power Supplies | * Identify the distinguishing properties of a motherboard. * Differentiate between computer form factors. * Identify power supply connectors. * Identify the voltage for each colored power supply wire. * Select an appropriate power supply based on a given scenario.   . | Study GuideTest |
| 2 | Bus Systems, Motherboards, and BIOS | * Identify the components on a motherboard. * Identify the function of the Northbridge. * Identify the function of the Southbridge. * Recommend a motherboard for a given scenario. * Identify appropriate BIOS settings. * Differentiate expansion slots on the motherboard. | Study Guide  * Test |
| 3 | CPUs and Cooling | * Identify the appropriate processor based on a given scenario. * Identify the appropriate socket for a CPU. * Identify the function of each electronic components of the CPU. * Select the appropriate cooling method for a given scenario. | Study Guide  * Test |
| 4 | Memory and Storage | * Identify RAM types and features. * Identify the type and capacity of the various optical drives available. * Identify the connector pins used on the data cables used to connect storage devices to the motherboard. * Identify the proper memory to install based on a given motherboard. * Identify the appropriate storage devices to install based on a given scenario. | Study Guide  * Test #4 |
| 5 | I/O Ports | * Identify and compare I/O ports. * Identify connector types and associated cables. * Identify the characteristics of connection interfaces. * Identify the appropriate connector or cable used to connect various hardware components. | Study Guide  * Test |
| 6 | RAID, Input and Output Devices | * Compare and contrast RAID. * Identify input devices. * Identify output devices. | Study Guide  * Test |
| 7 | Video and Component Purchasing | * Identify video components and standards. * Identify video expansion choices. * Identify and select appropriate components for a custom configuration based on customer specifications or needs. | Study Guide  * Test |
|  | Mid-Term Review | * Review computer hardware. * Assemble a computer. | Assembly LabMid-Term Exam |
| 8 | Laptops and Printers | * Identify laptop components. * Identify laptop expansion capabilities. * Identify laptop connection types. * Identify printer features. * Identify the advantages and disadvantages of specific printer types. * Identify basic printer troubleshooting issues. | Study Guide  * Test |
| 9 | Network Fundamentals and Cabling | * Compare and contrast types of networks. * Identify network cables and connectors. * Categorize characteristics of connectors and cables. * Identify the appropriate networking tools to use based on a given scenario. | Study Guide  * Test |
| 10 | OSI Model, Network Devices, and Network Standards | * Identify and compare network devices. * Identify the purpose of each layer of the OSI Model. * Identify the function of network devices. * Identify the properties of Internet connection types. * Use TCP/IP utilities to discover network information. | Study Guide  * Test |
| 11 | IPv4 Addressing and Subnetting | * Identify public versus private IP addresses. * Describe static versus dynamic IP addresses. * Convert values between binary and decimal. * Describe IPv4 networks and subnets. * Subnet IPv4 address spaces. | Study Guide  * Test |
| 12 | IPv6 Addressing | * Identify a valid IPv6 address. * Identify the elements that make up the IPv6 packet header. * Identify the types of IPv6 addresses. | Study Guide  * Test |
| 13 | Wireless Fundamentals | * Identify common TCP and UDP ports, protocols and their purpose. * Compare and contrast wireless networking standards and encryption types. * Identify the appropriate settings for installing, configuring, and deploying a SOHO wireless/wired router. | Study Guide  * Test |
| 14 | Operational Procedures and Soft Skills | * Identify the practices, policies, and procedures related to the use of fire extinguishers. * Identify external power issues and problems. * Identify successful communications skills required when dealing with customers. * Describe how to handle digital evidence. | Study Guide  * Test |
|  | Final Exam Review | * Review, laptops, printers, networking, and operational procedures. * Implement and secure a wireless network. | Wireless setup and IP addressing LabFinal Exam |