

## **NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY**

### **ITN 107 – PERSONAL COMPUTER HARDWARE AND TROUBLESHOOTING (3 CR.)**

#### **Course Description**

Includes specially designed instruction to give a student a basic knowledge of hardware and software configurations. Includes the installation of various peripheral devices as well as basic system hardware components. Lecture 3 hours per week.

#### **General Course Purpose**

This course provides a comprehensive foundation in understanding PC desktop components. Students will learn how the components work together, how to troubleshoot, install and replace them. These skills are expected from any PC desktop, helpdesk and network support technician. The covered material of this course is related to the industry certification CompTIA A+.

#### **Course Prerequisites/Corequisites**

College level reading and writing ability

#### **Course Objectives**

Upon completion of this course, the student will be able to:

- a) Describe the functions of all PC computer components and how they work together
- b) Install, troubleshoot and replace most basic PC computer components
- c) Explain the difference between desktop PC, laptop, tablet and mobile device

#### **Major Topics to be Included**

- a) Power
- b) Processors
- c) Memory
- d) Motherboards
- e) Role of BIOS/CMOS
- f) Busses
- g) Device drivers and system resource
- h) Storage devices
- i) Peripheral devices
- j) Preventive maintenance principles

#### **Student Learning Outcomes**

##### Power

1. Describe the basic concepts of electricity
2. Identify and discuss power needs of a PC and individual components
3. Troubleshoot, select and replace a power supply
4. Protect yourself and equipment against electrical dangers

##### Processor

1. Compare and contrast different CPU manufacturers
2. Compare and contrast RISC and CISC CPU technologies
3. Identify different CPUs based on clock speed and internal bus size

4. Categorize CPUs by performance for different roles

#### Memory

1. Explain the role of RAM and ROM memory in computers
2. Compare and contrast different RAM technologies
3. Identify the correct RAM for a particular motherboard or device
4. Read and interpret memory labels
5. Upgrade RAM in a PC and in portable computer
6. Troubleshoot RAM in a PC and portable computers

#### Motherboards

1. Compare and contrast different motherboards based on manufacturer, chipset, form factor
2. Install/replace motherboards in a PC and portable computers
3. Be able to read and use motherboard user manual
4. Locate and identify various parts on a motherboard
5. Configure jumpers on a motherboard if needed
6. Explain how CPU, memory, busses, chipset and storage work together

#### Role of BIOS/CMOS alongside drivers

1. Discuss the role of the BIOS vs. the CMOS
2. Explain the purpose of CMOS and BIOS
3. Upgrade the BIOS
4. Troubleshoot the BIOS
5. Configure the CMOS and the BIOS

#### Busses

1. Locate and identify the various internal and external busses
2. Compare busses by features, speed and use
3. Define the differences between various internal and external bus technologies

#### Device drivers and system resources

1. Explain the function of device drivers and system resources
2. Explain how does Plug and Play work
3. Learn how to configure system resources manually if needed
4. Install and configure device drivers

#### Storage devices

1. Identify all storage devices in a PC and portable computers
2. Install/replace storage devices
3. Configure multiple storage devices to work together
4. Configure external and internal storage devices
5. Identify and discuss different storage types and proper usage of each type

#### Peripheral devices

1. Categorize basic types of printers
2. Explain how different printers work
3. Install and configure any PC peripheral devices (printers, scanners, external storage devices, etc.)

#### Preventive maintenance principle

1. Identify proper PC care and cleaning
2. Identify proper environment for PC operation and repair
3. Identify proper PC power requirements and power control (UPS, Surge suppressors)

### **Required Time Allocation per Topic**

In order to standardize the core topics of ITN 107 so that a course taught at one campus is equivalent to the same course taught at another campus, the following student contact hours per topic are required. Each syllabus should be created to adhere as closely as possible to these allocations. Of course, the topics cannot be followed sequentially. Many topics are taught best as an integrated whole, often revisiting the topic several times, each time at a higher level. There are normally 45 student-contact-hours per semester for a three credit course. (This includes 15 weeks of instruction and does not include the final exam week so  $15 * 3 = 45$  hours. Sections of the course that are given in alternative formats from the standard 16 week section still meet for the same number of contact hours.) The final exam time is not included in the time table. The category, Other Optional Content, leaves ample time for an instructor to tailor the course to special needs or resources.

Topic	Time in Hours	Percentages
Operating Systems, Drivers, Applications, Networking, Antivirus Programs, Troubleshooting	4	9%
OS components	2	4%
Application compatibility	3	7%
Driver compatibility	2	4%
Role of BIOS/CMOS alongside drivers	2	4%
Diagnosing software problems and suggesting solutions	4	9%
OS updates, patches, and service packs	3	7%
Overview of networking with emphasis on TCP/IP	3	7%
System backup and restoration	3	7%
Data protection	3	7%
Automating system tasks using various Operating System components and applications	3	7%
Securing an OS	3	7%
Preventing and responding to virus threats	3	7%
Other Optional Content	3	7%
Testing to include quizzes, tests, and exams (not including final exam)	4	9%
<b>Total</b>	<b>45</b>	<b>100%</b>