

COURSE OUTLINE

Troubleshooting Microcomputer Systems
Course Title

IT 220
Dept. & Course Number

I. COURSE DESCRIPTION:

This course covers hardware and software troubleshooting. It emphasizes the use of diagnostic utilities, information backup, basic equipment servicing, hardware repairs and upgrades as well as software upgrades, and implementation of new technology.

II. SEMESTER CREDIT: 3

III. CONTACT HOURS PER WEEK: 3 0 3
Lecture Lab Total

IV. PREREQUISITES: IT 115

V. STUDENT LEARNING OUTCOMES:

At the end of the course, students will be able, with 65% accuracy, to:

1. Gather system information by observing a computer system.
2. Determine what components are installed on a computer system, utilize a diagnostic utility to examine a computer system, and use the Add/Remove Programs Utility to install/uninstall Windows Components.
3. Display information about files and directories, describe the boot process, and utilize various commands at the command prompt.
4. Take a computer apart and reassemble it and search for computer's documentation,

VI. COURSE CONTENT

- A. Introducing Hardware
 1. Gather and Record System Information
 2. Identify Computer Parts
 3. Use Software to Examine a Computer
- B. How Hardware and Software Work Together
 1. Examine System Resources with Device Manager
 2. Use Microsoft Diagnostics with Windows
 3. Install/Uninstall Windows Components
- C. Understanding the Boot Process & Command Line
 1. Examine Files and Directories
 2. Observe the Boot Process
 3. Modify Configuration Files and Observe the Results
 4. Learn to Work from the Command Line
 5. Examine Windows Configuration Files
 6. Learn File Naming Conventions
- D. Taking Apart and Reassembling Computer.
 1. Find Documentation on the Internet
 2. Take a Computer Apart
 3. Put a Computer Back Together.

5. Enter, navigate, examine, and save changes in the setup utility, utilize utilities to examine a motherboard, and identify various motherboard components.

6. Determine appropriate memory types for a given motherboard, and identify memory problems.

7. Troubleshooting, managing, and formatting storage devices.

8. Install and partition a hard drive, format and test a hard drive, and utilize hard drive utilities to maintain a hard drive.

9. Back up, delete, and recover files on a hard drive, and troubleshoot hard drives.

10. Use a software utility to get information for a computer system and diagnose simple computer problems.

11. Install hardware.

12. Install Software.

E. The Motherboard

1. Examine and Adjust CMOS Settings
2. Use a Motherboard Diagnostic Utility
3. Identify a Motherboard and Find Documentation on the Internet
4. Identify Motherboard Components

F. Managing Memory

1. Research RAM on the Internet
2. Troubleshooting Memory Problems

G. Storage Devices

1. Troubleshoot storage devices.
2. Format storage devices.
3. Understanding different storage file systems (e.g. FAT, NTFS)
4. Identify different types of storage devices.

H. Understanding and Installing Hard Drives

1. Install and Partition a Hard Drive
2. Format and Test a Hard Drive
3. Test Hard Drive Performance
4. Use Disk Management Software
5. Use Hard Drive Utilities

I. Optimizing and Protecting Hard Drives

1. Perform Hard Drive Routine Maintenance
2. Back Up and Restore Files in Windows
3. Research Data Recovery Services and Utilities
4. Troubleshoot Hard Drives

J. Supporting I/O Devices

1. Gather Information on your System
2. Identify Hardware Conflicts Using Device Manager
3. Diagnose Simple Hardware Problems

K. Installing Hardware.

1. Install Hardware.
2. Configure Hardware.
3. Test Hardware.
4. Troubleshoot Hardware.

L. Installing Software.

1. Install Software.
2. Configure Software.
3. Test Software.
4. Troubleshoot Software.

13. Utilize various utilities to diagnose Windows Operating System problems.

- M. Managing and Troubleshooting Windows
1. Use the Microsoft Management Console
 2. Analyze a System with Event Viewer
 3. Use Task Manager
 4. Use Other Utilities

14. Install operating system and configuring settings.

- N. Installing and Configuring the Operating System
1. Explore Different Operating Systems
 2. Install Operating System
 3. Configure Operating System

15. Diagnose and solve problems with various hardware devices.

- O. Troubleshooting and Maintenance Fundamentals
1. Produce Help Desk Procedures
 2. Flash BIOS
 3. Troubleshoot General Computer Problems
 4. Troubleshoot Hypothetical Situations

VII. MATERIALS AND EQUIPMENT

1. Student computers with Windows OS.
2. Spare computers that can be disassembled and experimented with.
3. Troubleshooting tools and utilities.

VIII. TEXT AND REFERENCES

A. Text book

Andrews, Jean. A+ Guide to Managing and Maintaining Your PC, 6th Edition. Boston: Thomson Publishing Company, 2001.

IX. METHOD OF INSTRUCTION

- A. Lecture
- B. Demonstration
- C. Hands-On Activities
- D. Questions and Answers (Discussion)

X. METHOD OF EVALUATION

A. Description	Points	B. Transmutation of percent to letter grade
Assignments	20%	90-100-----A
Hands-On Projects	40%	80-89-----B
Chapter Tests	20%	70-79-----C
Midterm Exam	10%	65-69-----D
Final Exam	10%	0-64-----F
Total-----	100%	

Palau Community College
IT 220-Troubleshooting Microcomputer Systems
Course Learning Outcomes

During the course experience, the **Course Learning Outcomes** (CLOs) will be assessed through the use of signature assignments. A rating scale will be used to determine the students' proficiency level of each CLO using specifically aligned assignments. The numerical ratings of 4, 3, 2 and 1 are not intended to represent the traditional school grading system of A, B, C, D and F. The descriptions associated with each of the numbers focus on the level of student performance for each of the course learning outcomes listed below.

- Rating Scale:**
- 4-----Exceeds Expectations
 - 3-----Meets Expectations
 - 2-----Developing
 - 1-----Below Expectations

CLO #1:

Numerical Value	Identify different types of hardware and their functions.
4	Perform all of the following tasks accurately and completely: <ul style="list-style-type: none"> • Identify different types of hardware by name. • Identify different types of hardware by functionality. • Identify areas within the computer system in which the hardware is located/installed.
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete.
2	Perform the tasks mentioned above with mixed quality, but most are inadequate or incomplete.
1	Perform the tasks mentioned above inaccurately or incompletely.

CLO #2:

Numerical Value	Identify, diagnose, and fix computer problems.
4	Perform all of the following tasks accurately and completely: <ul style="list-style-type: none"> • Analyze symptoms. • Diagnose the problem. • Identify necessary steps needed to fix the problem by utilizing preinstalled/existing diagnostic utilities as well as Internet resources. • Fix the problem.
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete.
2	Perform the tasks mentioned above with mixed quality, but most are inadequate or incomplete.
1	Perform the tasks mentioned above inaccurately or incompletely.

CLO #3:

Numerical Value	Replace computer hardware.
4	Perform all of the following tasks accurately and completely: <ul style="list-style-type: none"> • Identify appropriate tools necessary to install computer hardware (e.g. non-magnetic screw drivers) • Successfully remove hardware that needs to be replaced. • Successfully install replacement hardware. • Perform additional installations and configurations necessary for the computer to boot up and to function properly.
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete.
2	Perform the tasks mentioned above with mixed quality, but most are inadequate or incomplete.
1	Perform the tasks mentioned above inaccurately or incompletely.

CLO #4:

Numerical Value	Examine and demonstrate an understanding of various troubleshooting terminologies and jargons.
4	Perform all of the following tasks accurately and completely: <ul style="list-style-type: none">• Utilize various hardware terminologies such as bus, motherboard, BIOS, and RAM.• Utilize various software terminologies such as open source, device driver, firmware, and plug and play.• Examine various operating systems and their history and demonstrate an understanding in the evolution of various platforms.• Examine various hardware and their history and demonstrate an understanding in the evolution of various devices.
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete.
2	Perform the tasks mentioned above with mixed quality, but most are inadequate or incomplete.
1	Perform the tasks mentioned above inaccurately or incompletely.