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<b>COURSE PREFIX/COURSE PREFIX/NO:</b>	<b>CPE 224</b>
<b>COURSE TITLE:</b>	<b>System Troubleshooting</b>
<b>LEC HRS/WEEK:</b>	<b>2</b>
<b>LAB HRS/WEEK:</b>	<b>3</b>
<b>CREDIT HRS/SEMESTER:</b>	<b>3</b>

### **COURSE DESCRIPTION**

This course covers the tools and techniques used in troubleshooting computer systems, fault isolation in computer systems by using logical analysis of systems, and test equipment indications.

### **COURSE COMPETENCIES**

Upon successful completion of this course, the student should be competent to perform the following tasks:

#### **Module A—Construction of a Personal Computer**

- Demonstrate the proper use of simple hand tools
- Exhibit safe laboratory practices
- Demonstrate proper Electrostatic Discharge (ESD) procedures
- Demonstrate proper Disassembly and Assembly of a Personal Computer
- Configure the CMOS BIOS setup of a personal computer
- Troubleshoot personal computer hardware.

#### **Module B—Understanding Microprocessor and System Board Components**

- Identify all the parts of a System Board
- Describe how the parts of a System Board function together
- Describe the function of various types of Mass Storage System devices
- Identify the inputs and outputs (I/O) of the System Board
- Troubleshoot System Board Components

#### **Module C—Installing and Configuring a Windows Operating System**

- Install and configure Windows 2000/XP
- Properly configure a Windows operating system
- Properly setup TCP/IP on a Personal Computer for network operation.
- Demonstrate basic file creation and file management
- Demonstrate basic operating system troubleshooting techniques

#### **Module D—Installing and Configuring Peripheral Devices**

- Demonstrate the proper way to format a fixed drive
- Install and configure CDROMs, Network Cards, and Multimedia Devices
- Install and configure printers
- Install and configure portable systems
- Troubleshoot peripheral devices

### **MINIMAL STANDARDS/PERFORMANCE OBJECTIVES:**

#### **Module A—Construction of a Personal Computer**

1. Given a fully functional personal computer and appropriate hand tools, the student shall will disassemble the computer into all the basic system parts, and then be able to re-construct the

computer. The PC must function from power-on, through POST, and the loading of the operating system. The re-assembled PC should be "customer ready" as defined by the instructor.

### **Module B—Understanding Microprocessor and System Board Components**

1. Given PC diagnostic software, the student will test the various parts of a complete personal computer system. This will include, as a minimum, performance testing of the system board, the storage media, the memory media, and the input/output devices making up the system.
2. Given a PC system with one or more faults, the student will perform analysis of the system board and identify the probable fault(s).

### **Module C—Installing and Configuring a Windows Operating System**

1. Given the installation software, the student will install and configure a Windows Operating System (2000 or XP).
2. The student will demonstrate the proper operation of the Operating System and shall be able to demonstrate the various utilities and administrative tools that make up the Operating System to the satisfaction of the instructor.
3. The student will troubleshoot, as appropriate, if the Operating System fails to function in a proper manner after installation.

### **Module D—Installing and Configuring Peripheral Devices**

1. Given a functioning personal computer, the student will be able to format the fixed drive to the satisfaction of the instructor.
2. Given the software, the student will install and configure a Network Interface Card and demonstrate its proper operation in a simple peer-to-peer network to the satisfaction of the instructor.
3. The student will properly add a printer to the computer system and demonstrate the proper operation of the printer to the satisfaction of the instructor.

## **COURSE REQUIREMENTS**

Students are responsible for attaining competencies through completion of the following course requirements:

### **ATTENDANCE**

Students are responsible for attending all scheduled meetings in the courses in which they are enrolled **until they have completed all course requirements**. Students are responsible for all material covered and for all assignments made in all classes. Students who are absent from a class more than 10 percent of the hours assigned may be withdrawn. A grade of "W" is assigned if the student's last date of attendance is on or before mid-term. If a student is withdrawn from a course and the last date of attendance is after mid-term, the grade assigned may be a "W" or a "WF." The attendance policy also applies to students enrolled in telecourses or online courses. "Attendance" is established for telecourses through contacting the instructor, turning in assignments, and completing tests. "Attendance" is established for online courses by contacting the instructor, logging into the course on a regular basis, and completing assignments and tests.

### **Missing Class**

In case a student does miss a class, he/she is responsible for obtaining the material that was covered during the absence. If a student is aware that he/she will miss a class, then the student should notify the instructor at the earliest possible date.

### **Missing Lab**

In case a student does miss a lab, he/she is responsible for completing the lab as soon as possible (preferably before the test covering the lab material). The lab will have to be made up on the student's own time.

## Missing a Test

If a student misses a test because of illness or urgent emergency, the he/she should notify the instructor prior to the class period, or at the earliest possible date. At that time a new date for the make up test will be scheduled. Students with unexcused absences during test will be allowed to take a make up test at the discretion of the instructor. The student has the burden to be sure that some arrangement is made with the instructor for taking a makeup test.

## STUDENT CONDUCT

York Technical College adheres to the South Carolina TECH Student Code and Grievance Procedure, approved by the State Board for Technical and Comprehensive Education on November 13, 2003. (Copies of this *Student Code and Grievance Procedure* are available in the College Library, the Industrial & Engineering Technologies Division Offices in Building C and D, the Business, Computer, Arts & Sciences Division Office in Building A, the Health & Human Services Division Office in Building A, the Student Government Association Office in the Student Center, in the Student Services Building., and on the College's website.) It is the policy of York Technical College that the *Student Code and Grievance Procedure* shall govern conduct and guarantee due process for students enrolled at the College. The College expects all students to conduct themselves with dignity and to maintain high standards of responsible citizenship. The regulations which follow are significant and students are expected to become familiar with them:

1. The College reserves the right to decline admission, to suspend, or to require the withdrawal of anyone whose conduct is disruptive to the educational process.
2. The possession or consumption of alcoholic beverages or other drugs by a student while on College property is prohibited and is grounds for dismissal. York Technical College does not sanction the use of alcoholic beverages at any event involving students of the College.
3. Children are not permitted in classrooms, shops or labs. Children should not be left unattended at any time on campus.
4. Any student caught cheating or involved in any other academic dishonesty will be given a grade of zero and will be subject to further disciplinary action.
5. All students should display a current parking decal on their vehicle and abide by the parking regulations provided.
6. Students are not permitted to eat or drink in the library or labs. Eating and/or drinking in classrooms is left to the discretion of the instructor. Smoking is not permitted in buildings.

## PARTICIPATION IN CLASS

Students will be expected to participate in class discussions, to demonstrate problem-solving techniques, to complete tests, homework, lab experiments, lab reports and other assigned work.

## LAB REQUIREMENTS

During laboratory experiments, the students may work in teams of two or individually if space permits. Students must demonstrate to the instructor that the circuit is working correctly before they leave. All assigned lab work must be completed before the student leaves the lab unless prior arrangements are made with the lab instructor.

Students will be asked to demonstrate mastery of the competencies outlined in the section on **COURSE COMPETENCIES** and again in the section on **MINIMAL STANDARDS/PERFORMANCE OBJECTIVES**. This demonstration will in the form of a lab exam given to each individual student. Students may repeat the lab exam once. Students must achieve a 90% score after the repeat.

To demonstrate communication skills, at least one laboratory report must be written formally and submitted with the lab books as part of the lab requirements. This report or reports will be given the same weight as each of the other lab experiments. The requirements for the reports will include the following:

- Be computer generated using available word processing packages in the electronics or computer labs or a home computer.
- Be contained in a standard size, solid color cover with fasteners.
- Student's name, course number and semester will be written on the cover.
- If more than one lab report is required, all may be contained within the same folder.
- Follow the format guidelines given by the instructor. In general, each lab report should contain the following: date of experiment, title, objectives, equipment list, schematic diagrams, procedures, data tables, sample calculations, any graphs generated by the lab, and conclusions.
- The conclusion should restate the objectives of the lab and whether the objectives were met. A comparison between the measured and computed values should also be included with explanation of errors greater than 5%.
- Be neat, concise, readable and written using correct English grammar. A rubric for grading is attached to this document

### **Evaluation**

Lab reports will be evaluated based on readability, accuracy, and whether it contains all necessary parts. A rubric for grading lab reports is attached

### **EVALUATION STRATEGIES/GRADING**

The grading scale will be as follows:

#### **Grade Points**

A	90-100
B	80-89
C	70-79
D	60-69
F	00-59

#### **Evaluation Method**

*Unless otherwise stated:* Tests may be written or oral and may contain questions that are true or false, short answer, multiple choice, fill in the blank and/or problems.

Each Module will carry equal weight. Each test within each module will carry equal weight. Each lab and report within a module will carry equal weight.

Module grades will be determined as follows:

Major Tests (minimum of 1)	60 %
Laboratory (minimum of 1)	20 %
Instructor Options	10 %
Work Ethics	10%

Distributed evenly among:

- Attendance
- Team Work
- Quality
- Safety
- Perseverance
- Participation
- Cooperation
- Ethical behavior
- Respect for others
- Timeliness

The instructor options will be discussed with the students during the first week of class. These options may include homework, spot quizzes or written reports.

**ENTRY-LEVEL SKILLS:** The student shall possess competency with basic hand tools, a personal computer, and shall be able to perform voltage and resistance measurements with a digital multimeter.

**PREREQUISITES:** *Registration by department permission only*

**CO-REQUISITES:** *None*

**Disabilities Statement:** Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.

Lab Report Check Sheet:      CPE-224

Student Name(s): \_\_\_\_\_  
 \_\_\_\_\_

		Lab		Lab		Lab	
Preliminary		Yes	No	Yes	No	Yes	No
	Title						
	Date						
	Objective						
	Equipment						
Procedures							
	Procedure Statements						
	Schematics/Drawings						
Results							
	Data Tables						
	Formulas						
	Sample Calculations						
	Graphs						
Conclusions							
	Summarize Objectives						
	Summary of results						
	Compare Expect. To						
	Explain errors						
	Address Questions						
		Numerical Deductions*					
Characteristics							
	Readable						
	Understandable						
	Accurate						
	Neat						
	Organized						
Composition							
	Punctuation						
	Spelling						
	Complete Sentences						
	Other						
Final Grade							

\*Points will be deducted from the total grade in "Characteristics" and "Composition" as follows:  
 5 - >6 errors; 3 - 4 to 6 errors; 1 - 1 to 3 errors; 0—no errors  
 5 points will be deducted for any "no" item.