

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: COMPUTER SYSTEM MAINTENANCE

Code No.: CET209-3 Semester: 3

Program: COMPUTER ENGINEERING TECHNOLOGY

Author: TYCHO BLACK

Date: SEPT , 1991 Previous Outline Dated: \_\_\_\_\_

APPROVED:

*L.P. Crockett*

Dean

91/08/18

Date

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TOTAL CREDIT HOURS:        48

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PREREQUISITES:                ELN107

CET228 is recommended as a co-requisite.

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I.    PHILOSOPHY/GOALS:

The objective of this practical lab-oriented course is to develop skills in troubleshooting, configuring and maintaining a variety of computer systems and peripherals, primarily in a DOS and PC environment.

The emphasis will be on practical hands-on skills rather than the underlying theory of operation, which is covered in other courses. Both hardware and software problems will be demonstrated with practical exercises and troubleshooting tests scheduled to support the theory.

II.   STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1.    Be able to use and manage a DOS computing environment effectively.
2.    Be able to apply a logical approach to troubleshooting PC's which will enable board-level maintenance and installation, fault diagnosis and system integration.
3.    Be able to install and manage hard drive systems effectively.
4.    Be able to use test equipment and diagnostic software to troubleshoot computer systems.
5.    Be able to maintain and configure PC system peripherals such as printers, serial ports, keyboards, mice and monitors.
6.    Be familiar with the various families of PC's, their busses and support chips including the PS/2 family.

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III. TOPICS TO BE COVERED:

1. The history of the DOS operating system and its commands, including batch files and shells.
2. A logical approach to board-level troubleshooting.
3. Diagnostic software and test equipment.
4. Installation of hard drives, their interfaces and backup procedures.
5. Resource conflicts and their resolution and system integration issues.
6. Keyboard types and their maintenance.
7. Printers and serial port characteristics, cables and troubleshooting.
8. Memory management issues and memory chip fault diagnosis.
9. The evolution of PC's, their configurations, and support chips and boards.
10. Viruses and their control.

IV. LEARNING ACTIVITIES

REQUIRED RESOURCES

1 THE DOS ENVIRONMENT

- 1. DOS versions, history and limitations.
- 2. DOS commands useful for system maintenance.
- 3. Batch files, shells and Windows.

TEXT:  
"UPGRADING AND REPAIRING PC'S"  
 by  
 Scott Mueller  
 (QUE Books)  
 CHAP. 15

2 PC AND PS/2 CONFIGURATIONS

- 1. The IBM XT and AT family of computers, subsystems and proper disassembly /assembly procedures and compatibility issues.
- 2. The PS/2 family of computers.
- 3. System components: motherboards, memory expansion slots, Power supplies, Keyboards.

CHAP. 3  
 CHAP. 5

CHAP. 4

3 TROUBLESHOOTING AND PREVENTATIVE MAINTENANCE

- 1. Preventative maintenance procedures and threats to system components.
- 2. A logical approach to troubleshooting PC systems.
- 3. Resource conflicts and their resolution.
- 4. Board level PC troubleshooting.
- 5. Memory chips, faults and their diagnosis.

CHAP. 6,7

CHAP. 11

4 FLOPPY AND HARD DISK DRIVES

- 1. Floppy disk drive types, encoding methods, installation and maintenance.
- 2. Hard disk drive types, interfaces and controllers.

CHAP. 8,9

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3. Low level formatting, interleave and disk management software.
4. Disk backup methods.
5. Installation of hard drives.

5 PERIPHERAL MAINTENANCE

1. Maintenance of keyboards.
2. Printer and printer cables maintenance.
3. RS 232C Serial Port and cabling.
4. Monitor faults.
5. Test equipment and its use in troubleshooting computer systems.

CHAP. 10

6 RELATED TROUBLESHOOTING ISSUES

1. Viruses and their cure.
2. New peripherals and their integration into systems.

Instructors  
notes.

V. METHOD OF EVALUATION:

3 THEORY TESTS ( 15% each)	45%
LAB PROJECTS/ASSIGNMENTS	40%
QUIZZES AND PRACTICAL TESTS	10%
ATTENDANCE	5%

(The percentages shown above may vary slightly where circumstances warrant.)

GRADING SCHEME

A+	90	-	100%
A	80	-	89%
B	70	-	79%
C	55	-	69%
I	Incomplete		
R	Repeat		

UPGRADING OF INCOMPLETES

When a student's course work is incomplete or final grade is below 55%, there is the possibility of upgrading to a pass when a student meets the following criteria:

1. The students attendance has been satisfactory.
2. An overall average of at least 40% has been achieved.
3. The student has not had a failing grade in all of the theory tests taken.
4. The student has made reasonable efforts to participate in class and complete assignments.

LABS:

Lab activities represent a very important component of this course in which practical skills will be developed. Because of this, attendance is mandatory and the satisfactory completion of all lab activities is required. It is the student's responsibility to discuss absences from regularly scheduled labs with the instructor so that alternate arrangements (where possible) can be made to complete the lab requirements.

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ATTENDANCE:

Absenteeism will affect a student's ability to succeed in this course. Absences due to medical or other unavoidable circumstances should be discussed with the instructor, so that remedial activities can be scheduled. As shown in the evaluation procedures, a student may lose up to 5% of their final mark for poor attendance.

VI. REQUIRED STUDENT RESOURCES:

TEXT BOOKS:

"PC Upgrading and Repair" by Scott Mueller (QUE Books)

VII. ADDITIONAL RESOURCE MATERIALS AVAILABLE:

" Microcomputer Servicing" by Asser, Stigliano and  
Bahrenburg (Merrill Publ.)

VIII. SPECIAL NOTES:

Students with special needs (eg. physical limitations, visual or hearing impairments, or learning disabilities) are encouraged to discuss any required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as deemed necessary to meet the needs of students or take advantage of new or different learning opportunities.