COURSE NUMBER & TITLE: ELTR 2920-01 Small Computer Repair Techniques

SEMESTER/YEAR: Fall 2006

LECTURE HOURS: 2  LAB HOURS: 3  CREDIT HOURS: 3.5

CLASS TIME:  
Lecture: 6-7:50 pm  M  ROOM: EI 124  
Lab: 6-8:50 pm  W  EI 124

INSTRUCTOR'S NAME: Jonathan Blesi

INSTRUCTOR’S CONTACT INFORMATION:  
Office Location: EI 118  
Office Phone: 268-2459  
Email: jblesi@caspercollege.edu

OFFICE HOURS: MWF 10:00-10:50 am  
W 1:00 -1:50 pm  
TH 12-12:50 pm (CS 140)

COURSE DESCRIPTION: Techniques used to install and maintain microcomputers. Emphasis will be on basic computer trouble-shooting techniques, both at the system and board level with representative small computer systems. Mass storage techniques for small systems, their strong and weak point and repair. Basic internet connectivity via both modems and NICs will also be covered.

STATEMENT OF PREREQUISITES: ELTR1760, permission of the instructor

GOALS: Upon completion of the course the student will:
1. Understand the functions carried out within the major subsystems making up a typical IBM type PC.
2. Be able to repair and replace these subsystems down to the component level.

OUTCOMES: The student will:
1. Build a functioning PC from subsystem level components.
2. Install a hard disk subsystem complete with operating system software and applications software.
3. Install a CDROM subsystem with applications software.
4. Upgrade a PC's CPU and secondary storage subsystems.
5. Trouble shoot all subsystems studied to the component level where possible.

METHODOLOGY: See attachment
EVALUATION CRITERIA:  ELTR-2920 GRADING GUIDELINES

TOTAL VALUE

- Full tests - total of three, each worth 100 points.  
  - 300 pts
- Lab reports - total of eleven, each 10 pts., best 10 labs.  
  - 100 pts
- Grand Total  
  - 400 pts
- Semester average = Grand total / 4

Letter Grade  | Semester Average
-------------|------------------
A            | 90.0-100.0
B            | 80.0-89.9
C            | 70.0-79.9
D            | 60.0-69.9
F            | 0.0-59.9

REQUIRED TEXT, READINGS, AND MATERIALS:  *Upgrading & Repairing of PC’s:*
  - Mueller
  - Various handouts

CLASS POLICIES:
*Last Date to Change to Audit Status or to Withdraw with a W Grade:*
  - Standard college policy.

SAFETY: Personal and equipment safety standards will be strictly enforced. It is the individual’s responsibility to develop a safe work attitude.

STUDENT RIGHTS AND RESPONSIBILITIES: Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

*Chain of Command:* If you have any problems with this class, you should first contact the instructor in order to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take your problem through the appropriate chain of command starting with the department head, then the division chair, and lastly the vice president for academic affairs.

*Academic Dishonesty - Cheating & Plagiarism:* Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct.

*ADA Accommodations Policy:* It is the policy of Casper College to provide appropriate accommodations to any student with a documented disability. If you have a need for accommodation in this course, please make an appointment to see me at your earliest convenience.
Unit-1 The Hierarchical Model of the Small Computer
   Power supply.
   CPU subsystem.
   Primary memory subsystem.
   Secondary memory subsystem.
   Interactive I/O subsystem.
   Hard copy I/O subsystem.
   Remote I/O subsystem.
   Software.

Unit-2 Power Supplies.
   Linear supply block diagram.
   Linear rectifier circuits.
   Linear filters.
   Linear regulator circuits.
   Switching supply block diagram.
   Switching regulators circuits.
   Switching filters.
   Troubleshooting power supplies.

Unit-3 CPU Subsystems.
   8, 16 and 32 bit CPU's
   The 8086/88 CPU.
   Support and peripheral chips for the INTEL CPU's.
   Math CoProcessors.
   A complete motherboard.
   PC, AT/ISA and EISA buses.
   Troubleshooting the motherboard.

Unit-4 Primary Memory Subsystems
   Functions of RAM and ROM.
   Common ROM chips.
   Common Static and Dynamic RAM chips.
   Interfacing DRAM to CPU.
   RAM issues DIPS, SIMMS and SIPPS.
   Troubleshooting primary memory.

Unit-5 Secondary Memory Overview.
   Summary of secondary memory techniques.
   Magnetic tape.
   Magnetic flexible diskettes.
   Magnetic hard disks.
   Optical storage options.
Unit-6 The Floppy Disk Subsystem
The media.
Different floppy formats.
The mechanical drive.
Drive electronics.
The interface card.
Troubleshooting floppy diskette subsystems.

Unit-7 The Hard Disk Subsystem.
Components of the hard disk subsystem.
ST-506 hard drives.
ESDI hard drives.
SCSI hard drives.
IDE hard drives.
Installing a hard disk subsystem.
Troubleshooting hard disk subsystems.

Unit-8 Interactive I/O subsystems.
I/O devices an overview.
CRT display monitors, MDA, CGA, EGA, VGA.
Video interface cards MDA, Hercules, CGA, EGA, VGA.
Troubleshooting video subsystems.

Unit-9 Printers.
Introduction to printer subsystem.
Impact dot matrix printers.
Thermal ink jet printers.
Daisy wheel printers.
Laserjet type printers.

Unit-10 I/O Cards
Centronics printer ports.
RS-232 serial ports.
Game ports.

Unit-11 LANS
LAN topology, bus, star, ring.
LAN media, coaxial cable, fiber optic, twisted pair.
A look at Ethernet.