ELEC 88.81 Course Outline as of Spring 2003

CATALOG INFORMATION

Dept and Nbr: ELEC 88.81   Title: COMPUTER HARDWARE
Full Title: Computer Hardware
Last Reviewed: 9/19/2011

Units			Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	1.50		Lecture Scheduled	3.00	8	Lecture Scheduled	24.00
Minimum	1.50		Lab Scheduled	0	3	Lab Scheduled	0
			Contact DHR	0		Contact DHR	0
			Contact Total	3.00		Contact Total	24.00
			Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 48.00   Total Student Learning Hours: 72.00

Title 5 Category: AA Degree Applicable
Grading: Grade or P/NP
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:
Formerly: ELEC 299.7

Catalog Description:
A fundamental introduction to computer hardware. Content includes identification and operation of components on the motherboard, and internal and external peripheral devices of PC's. Includes disassembly and reassembly of a PC by each student. Information is presented on metric prefixes, units used in computer terminology, number systems (decimal, binary, and hexadecimal), with emphasis placed upon general computer operation and maintenance.

Prerequisites/Corequisites:

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: A fundamental introduction to computer hardware. Identification and operation of components on the motherboard & internal and external peripheral devices of PC's. Includes PC disassembly & reassembly. (Grade or P/NP)
Prerequisites/Corequisites:

Recommended:
Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

		Effective:	Inactive:
AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer: Transferable   Effective: Spring 2003   Inactive: Fall 2017

UC Transfer: Effective: Inactive:

CID:

Certificate/Major Applicable:
Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:
The students will:
1. Analyze and apply appropriate safety procedures while working on systems.
2. Disassemble and assemble an IBM compatible computer.
3. Differentiate among motherboard integrated circuits and classify as to their type and function.
4. Calculate mathematical conversions between binary, octal, and hexa-decimal numbers.
5. Assess and compare specifications and prices of system components.
6. Infer from the performance of a diagnostic test the possible resolution of a hardware or software problem.
7. Analyze collected data to troubleshoot a system fault and identify the failed component.
8. Analyze the relationship between the CPU and peripheral devices.

Topics and Scope:

1. The IBM PC Described
   . The structure of the PC system.
   . Inside the system unit.
   . Memory and addresses.
   . Mass Storage.
   . Computer language levels.
2. Number Systems
   . Conversions.
   . Metric Prefixes
3. IBM PC Operations

. The basic parts of the IBM XT PC.
. Chip location scheme.
. Central processing unit.
. Memory design
. The IBM XT PC bus structure.
. Input and output.
. The power supply.
. How the system works.
4. Basic Troubleshooting
. Introduction to troubleshooting.
. Component recognition.
. Component failures.
. How disk drives fail.
. How displays fail.
. Repair-generated failure.
. How to localize failure and make repairs.
. Safety precautions during troubleshooting and repairs.
. Electrostatic Discharge (ESD)
5. Troubleshooting and Repair.
. Start-up problems.
. Run problems.
. Display problems.
6. Routine Preventive Maintenance.
. Contributors to system failure.
. Temperature.
. Dust and other particles.
. Noise interference.
. Power-line problems.
. Corrosion.
. Magnetism.
. Disk maintenance.
. Disk drive maintenance.
. Using heat to spot potential problems.
. Spare parts.

Assignment:

1. Determine from research and complete a written tabulation of the
   current replacement cost of specific components and devices.
2. Write a one-page explanation of the relationship between the CPU and
   peripheral devices.
3. Complete homework problems that involve converting between number
   systems.
4. Perform component and device identification on an IBM compatible PC.
5. Perform troubleshooting at the block diagram level.
6. Perform routine maintenance procedures.
7. Quizzes and exam.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written homework	Writing 5 - 15%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems	Problem solving 10 - 30%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Class performances	Skill Demonstrations 30 - 50%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, True/false, Matching items, Completion	Exams 30 - 50%

Other: Includes any assessment tools that do not logically fit into the above categories.

None	Other Category 0 - 0%

Representative Textbooks and Materials:
Upgrading and Repairing PCs, 7th ed. 1999, Scott Mueller. QUE
A+ Certifiction Training Kit, 3rd ed. 2001, Microsoft
How Computers Work, Millennium Edition, 2000, QUE