ELEC 88.81 Course Outline as of Fall 2017

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	1.50	17.5	Lecture Scheduled		26.25
Minimum	1.50		Lab Scheduled	0	8	Lab Scheduled		0
			Contact DHR	0		Contact DHR		0
			Contact Total	1.50		Contact Total		26.25
			Non-contact DHR	0		Non-contact DHR		0

Total Out of Class Hours: 52.50   Total Student Learning Hours: 78.75

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:
An introduction to computer hardware, including: identification and operation of components on the motherboard and internal and external peripheral devices of PCs; configuration and upgrading of components and memory; metric prefixes; units used in computer terminology and number systems (decimal, binary, and hexadecimal). Emphasis on general computer operation and maintenance.

Prerequisites/Corequisites:

Recommended Preparation:
Course Completion or Concurrent Enrollment in CS 101B or equivalent

Limits on Enrollment:

Schedule of Classes Information:
Description: An introduction to computer hardware, including: identification and operation of components on the motherboard and internal and external peripheral devices of PCs; configuration and upgrading of components and memory; metric prefixes; units used in computer terminology and number systems (decimal, binary, and hexadecimal). Emphasis on

general computer operation and maintenance. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended: Course Completion or Concurrent Enrollment in CS 101B or equivalent
Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
CSU GE:	**Transfer Area**		Effective:	Inactive:
IGETC:	**Transfer Area**		Effective:	Inactive:
CSU Transfer:		Effective:	Inactive:	
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. Inspect and evaluate the input, processing, and output functions of a personal computer (PC).
3. Remove and replace PC components.
4. Identify motherboard components and classify by their type and function.
5. Perform mathematical conversions between binary, octal, and hexadecimal numbers.
6. Assess and compare specifications and prices of system components.
7. Perform basic electrical measurements.
8. Infer from the performance of a diagnostic test the possible resolution of a hardware or software problem.
9. Analyze the relationship between the CPU and peripheral devices.
10. Note that repeating students will perform the above assignments under the conditions of new technology.

Topics and Scope:

I. The PC described
    A. structure of the PC system
    B. motherboard and subsystems
    C. memory and addresses
    D. mass storage
    E. computer language levels
II. Number systems
    A. conversions

B. metric prefixes
III. PC operations
    A. basic parts of the PC
    B. central processing unit
    C. memory design
    D. PC bus structure
    E. input and output
    F. power supply
    G. how the system works
IV. Electrical units and measurement
    A. Volt, Ohm, Ampere, Watt
    B. Ohm's law, Watt's law
    C. engineering prefix notation
    D. three significant figures and data collection
    E. typical diagnostic equipment
    F. correct use of test equipment to measure voltage
V. Basic troubleshooting
    A. introduction to troubleshooting
    B. component recognition
    C. component failures
    D. repair-generated failure
    E. how to localize failure and make repairs
    F. safety precautions during troubleshooting and repairs
    G. electrostatic discharge (ESD)
VI. Troubleshooting and repair
    A. start-up problems
    B. run problems
    C. display problems
VII. Routine Preventive Maintenance.
    A. contributors to system failure
    B. temperature.
    C. just and other particles
    D. noise interference
    E. power-line problems
    F. magnetism
    G. disk maintenance
    H   disk drive maintenance
    I.   using heat to spot potential problems
    J. spare parts
Note that repeating students will perform the above assignments under the conditions of new technology.

Assignment:

1. 2-4 written repair log reports (1-3 pages in length)
2. 6-11 homework problem sets
3. 4-10 skill demonstration performance tests
4. 2-4 quizzes and one final 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.

Repair log reports	Writing 10 - 20%

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

Homework problems from text and course	Problem solving 15 - 25%

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

Skill demonstration performances	Skill Demonstrations 15 - 25%

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

Multiple choice, true/false, matching items, completion	Exams 40 - 50%

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

Class participation	Other Category 5 - 10%

Representative Textbooks and Materials:
 A+ Guide to Managing and Maintaining Your PC, Sixth Edition, Comprehensive, by Jean Andrews, 2007, Thompson Course Technology (classic)