#### **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	ľ	Nbr of Weeks	<b>Course Hours Total</b>	
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:** Effective: Inactive: Area CSU GE: **Transfer Area** Effective: Inactive:

**Transfer Area IGETC:** 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)