Course Acronym:	ECHT
Course Number:	140
Descriptive Title:	Introduction to Computer Hardware Systems I
Division:	Industry and Technology
Department:	Electronics and Computer Hardware Technology
Course Disciplines:	Electronic Technology, Electronics
Catalog Description:	This course provides a general study of computer hardware systems and their underlying operating technologies. Topics covered include an overview of microprocessor-based computer systems, binary and hexadecimal numbering systems, computer system hardware components and peripherals, operating systems, basic hardware failures, and test and verification of proper computer systems operation. Students work in teams to develop analytical skills and techniques. Note: Letter grade or pass/no pass option.
Prerequisite:	
Co-requisite:	
Recommended Preparation:	Electronics and Computer Hardware 11 and Computer Information Systems 13 or equivalent
Enrollment Limitation:	
Hours Lecture (per week):	2
Hours Laboratory (per week):	4
Outside Study Hours:	4
Total Course Hours:	108
Course Units:	3
Grading Method:	Letter Grade and Pass/No Pass
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	03/12/1990
Transfer UC:	No
Effective Date:	
General Education: ECC	
Term:	
Other:	

CSU GE:	
Term:	
Other:	
IGETC:	
Term:	
Other:	
Student Learning Outcomes:	**SLO #1 Course Notebook Students** The students will assemble and maintain a five-section course notebook. **SLO #2 Component Handling Techniques** The student will be able to demonstrate their knowledge in proper component handling techniques, especially regarding (ESD), Electrostatic Discharge. **SLO #3 Computer Estimate and Configuration** The student will be able to demonstrate their ability to cost out and configure either a Business or "Gaming" Computer per customer specifications.
Course Objectives:	1. Identify basic computer hardware components and peripherals. 2. Understand the operating principals of computer system hardware. 3. Assemble and disassemble computer systems using industry standard techniques and safety procedures. 4. Install hardware expansion cards and peripheral components. 5. Install and configure standard fixed disks and drives. 6. Install current operating systems for microprocessor-based computer systems. 7. Verify the proper operation of a computer system using observation techniques and diagnostic skills. 8. Employ diagnostic software to test and check computer system hardware and software integrity and functionality.
Major Topics:	**I. COMPUTER HARDWARE SYSTEMS OVERVIEW (3 hours, lecture)** A. History of computer and personal computer systems B. Binary and hexadecimal numbers **II. BINARY, DECIMAL AND HEXADECIMAL NUMBERS (8 hours, lab)** A. Binary to decimal conversions B. Decimal to hexadecimal conversions C. Binary to hexadecimal conversions **III. COMPUTER HARDWARE SYSTEMS COMPONENT IDENTIFICATION AND OPERATION PRINCIPALS (6 hours, lecture)** A. Identification of basic computer hardware components and peripherals

B. Understand the operating principals of computer system
hardware components and peripherals

IV. COMPUTER HARDWARE SYSTEMS COMPONENT IDENTIFICATION AND OPERATION PRINCIPALS (16 hours, lab)

A. Identification of basic computer hardware components and
peripherals

B. Understand the operating principals of computer system
hardware components and peripherals

V. COMMAND LINE INTERFACE FOR COMPUTER SYSTEMS (6 hours, lecture)

A. Installation and configuration of current command line operating
systems

B. Use of common commands and utilities, related to hardware
configuration

VI. COMMAND LINE INTERFACE FOR COMPUTER SYSTEMS (8 hours, lab)

A. Installation and configuration of current command line operating
systems

B. Use of common commands and utilities, related to hardware
configuration

VII. HARDWARE INSTALLATION AND CONFIGURATION FOR COMPUTER SYSTEMS (12 hours, lecture)

A. Analysis of system hardware components

B. Assembly and disassembly of computer hardware systems
components

C. Testing and observation of computer systems and peripherals

D. Verifying proper operation by using diagnostic testing software

VIII. HARDWARE INSTALLATION AND CONFIGURATION FOR COMPUTER SYSTEMS (20 hours, lab)

A. Analysis of system hardware components

B. Assembly and disassembly of computer hardware systems
components

C. Testing and observation of computer systems and peripherals

D. Verifying proper operation by using diagnostic testing software

	IX. GRAPHICAL USER INTERFACE (GUI) FUNDAMENTALS FOR COMPUTERS SYSTEMS (6 hours, lecture)
	
	    A. Installation and configuration of current GUI operating systems
	
	    B. Use of common commands and utilities, related to hardware configuration
	
	    C. Installation and operation of diagnostic applications within the GUI environment
	
	X. GUI FUNDAMENTALS FOR COMPUTERS SYSTEMS (8 hours, lab)
	
	    A. Installation and configuration of current GUI operating systems
	
	    B. Use of common commands and utilities, related to hardware configuration
	
	    C. Installation and operation of diagnostic applications within the GUI environment
	
	XI. SEMESTER PROJECT DEVELOPMENT (3 hours, lecture)
	
	    A. Critical analysis
	
	    B. Individual and group discussion
	
	    C. Outlining template for term project
	
	XII. SEMESTER PROJECT DEVELOPMENT (12 hours, lab)
	
	    A. Critical analysis
	
	    B. Individual and group discussion
	
	    C. Presentation of term project

Total Lecture Hours:	36
Total Laboratory Hours:	72
Total Hours:	108
Primary Method of Evaluation:	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	Provided with a computer system with a non-functioning CD-ROM drive, replace the faulty CD-ROM drive and verify proper operation of the repaired computer system. Consult the instructor for evaluation.
Critical Thinking Assignment 1:	Integrate a set of computer hardware components and peripherals into a functioning computer system. Consult the instructor for evaluation.

Critical Thinking Assignment 2:	Provided with a computer system with a suspected hardware failure, determine if a hardware failure exists and write a one-page lab report listing the logical steps required for resolving the hardware failure. Submit lab report to the instructor.
Other Evaluation Methods:	Performance Exams Objective Exams Quizzes Written Homework Laboratory Reports Class Performance Homework Problems Term or Other Papers Multiple Choice Completion Matching Items True/False Other (specify): Computer Hardware System Design Research Assignment presentation
Instructional Methods:	Demonstration Discussion Group Activities Guest Speakers Laboratory Lecture Multimedia Presentations Other (please specify): Computer Based Training (DVD-ROM software for enhanced student training)
If other:	
Work Outside of Class:	Study Answer questions Skill practice Required reading Problem solving activities Written work
If Other:	
Up-To-Date Representative Textbooks:	Cheryl Schmidt. COMPLETE A+ GUIDE TO IT HARDWARE AND SOFTWARE HARDWARE. 9th edition. Pearson, 2023 Cheryl Schmidt. COMPLETE A+ GUIDE TO IT HARDWARE AND SOFTWARE HARDWARE – LAB MANUAL. 9th edition. Pearson, 2023
Alternative Textbooks:	
Required Supplementary Readings:	
Other Required Materials:	Compact Disk Read Only Memory (CD-ROM) Digital Versatile Disc-Read Only Memory (DVD-ROM) 1 USB Flash Drive of at least 8GB of storage 1 - 3 Ring Binder - 1 1/2" hard cover

Requisite:	
Category:	
Requisite course(s): List both prerequisites and corequisites in this box.	
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	Electronics and Computer Hardware 11 and Computer Information Systems 13
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	**Ability to connect to circuits.** ECHT 11 - Connect meters to circuits, select proper meter ranges and obtain accurate measurements. ECHT 11 - Identify employment options and be aware of the preparation necessary for success. **Ability to understand the use of information technology and applications.** CIS 13 - Identify and analyze existing and emerging technologies and their impact on organizations and society including computer, communication and information systems, privacy, security, crime, ethics, global relationships, and career opportunities.
Requisite Skill:	or equivalent
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	If students have not taken ECHT 11 or CIS 13 but have taken similar courses at another college or have understanding of electronic circuitry and computer applications through work experience, students will have the skills needed to take this course. It is recommended that students have some form of basic knowledge of electronic circuitry and computer applications to enhance their success in this course.
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Osanne Ugya
Date:	09/01/1989

Original Board Approval Date:	03/12/1990
Last Reviewed and/or Revised by:	Paul Akhigbe
Date:	01/05/2023
Last Board Approval Date:	07/17/2023 effective FALL 2024