



El Camino College
COURSE OUTLINE OF RECORD – Approved

I. GENERAL COURSE INFORMATION

Subject and Number: Electronics and Computer Hardware Technology 142
Descriptive Title: Computer Systems and Hardware Technologies II with CompTIA Server+
Course Disciplines: Electronics AND Electronic Technology
Division: Industry and Technology

Catalog Description:

This course provides a comprehensive study of advanced computer hardware systems and associated technologies with CompTIA Server+ Certification preparation. Topics will include an in-depth analysis of microprocessor-based architectures and their related computer hardware system components and peripheral devices. Installation and configuration of the system hardware, advanced hardware and software integration skills, including conflict resolution, troubleshooting and optimization strategies will be taught.

Note: Letter grade or pass/no pass option.

Conditions of Enrollment:

Recommended Preparation: Electronics and Computer Hardware Technology 140

Course Length:	X Full Term	Other (Specify number of weeks):
Hours Lecture:	2.00 hours per week	TBA
Hours Laboratory:	4.00 hours per week	TBA
Course Units:	3.00	

Grading Method: Both
Credit Status: Associate Degree Credit

Transfer CSU: X Effective Date: 3/18/2002
Transfer UC: No

General Education:
El Camino College:

CSU GE:

IGETC:

II. OUTCOMES AND OBJECTIVES

- A. COURSE STUDENT LEARNING OUTCOMES (The course student learning outcomes are listed below, along with a representative assessment method for each. Student learning outcomes are not subject to review, revision or approval by the College Curriculum Committee)**

SLO #1 Course Notebook

The students will assemble and maintain a five-section course notebook.

SLO #2 Troubleshooting Techniques

The student will be able to demonstrate advanced skill levels in their knowledge of repairing computer systems using system troubleshooting techniques introduced within the scope of the class.

SLO #3 OEM Specifications

The student will be able to demonstrate their knowledge in using commercially available diagnostic tools to verify a system meets original equipment manufacturer (OEM) specifications.

The above SLOs were the most recent available SLOs at the time of course review. For the most current SLO statements, visit the El Camino College SLO webpage at <http://www.elcamino.edu/academics/slo/>.

- B. Course Student Learning Objectives (The major learning objective for students enrolled in this course are listed below, along with a representative assessment method for each)**

1. Assemble, install, configure, optimize, and test computer hardware systems and peripherals.
 - Performance exams
2. Employ industry standard methodologies to evaluate computer hardware systems and peripherals.
 - Quizzes
3. Test and evaluate computer hardware systems, computer hardware components and peripherals, and trace faults to the lowest repairable module.
 - Class Performance
4. Employ comprehensive diagnostic software to evaluate and benchmark computer hardware system performance.
 - Laboratory reports
5. Select, analyze and apply video standards and display types for specific industry requirements and various user applications.
 - Term or other papers
6. Select, analyze and apply printer standards and interfaces for specific industry requirements and various user applications.
 - Objective Exams
7. Perform proper server maintenance and techniques.
 - Class performance

III. OUTLINE OF SUBJECT MATTER (Topics are detailed enough to enable a qualified instructor to determine the major areas that should be covered as well as ensure consistency from instructor to instructor and semester to semester.)

Lecture or Lab	Approximate Hours	Topic Number	Major Topic
Lecture	1	I	OVERVIEW OF ADVANCED COMPUTER SYSTEMS AND HARDWARE TECHNOLOGIES WITH COMPTIA SERVER+ CERTIFICATION A. Overview of the current state of computer hardware systems technologies B. Purpose and functions of server form factors
Lab	4	II	OVERVIEW OF ADVANCED COMPUTER SYSTEMS AND HARDWARE TECHNOLOGIES WITH COMPTIA SERVER+ CERTIFICATION A. Overview of the current state of computer hardware systems technologies B. Identification of server hardware types C. Different server types and features
Lecture	4	III	COMPONENT IDENTIFICATION AND OPERATION PRINCIPALS FOR COMPUTER HARDWARE SYSTEMS A. Identification and operating principals of advanced computer hardware system components and peripherals B. Installing and configuring server components Pin Grid Array (PGA) and Land Grid Array (LGA) processors C. Installation of server Random Access Memory (RAM)
Lab	12	IV	COMPONENT IDENTIFICATION AND OPERATION PRINCIPALS FOR COMPUTER HARDWARE SYSTEMS A. Identification and operating principals of advanced computer hardware system components and peripherals B. Installation of hard disc for Redudant Array of Independent Disks (RAID) configuration
Lecture	8	V	INSTALLATION AND CONFIGURATION FOR COMPUTER HARDWARE SYSTEMS A. Assembly and disassembly of hardware systems components B. Installing, testing and benchmarking of computer systems components and peripherals C. Use of diagnostic hardware and software to verify proper component operations D. Installation configuration of server operating system

Lab	16	VI	<p>INSTALLATION AND CONFIGURATION FOR COMPUTER HARDWARE SYSTEMS</p> <p>A. Assembly and disassembly of hardware systems components</p> <p>B. Installing, testing and benchmarking of computer systems components and peripherals</p> <p>C. Use of diagnostic hardware and software to verify proper component operations</p> <p>D. Server roles and requirements</p>
Lecture	9	VII	<p>ANALYSIS, OPTIMIZATION AND REPAIR TECHNIQUES FOR COMPUTER HARDWARE SYSTEMS</p> <p>A. Analysis of hardware components and peripherals using industry standard system integration techniques</p> <p>B. Optimization of computer systems and peripherals</p> <p>C. Detecting and correcting the lowest repairable hardware module</p> <p>D. Configuration of servers to use Input/Output (IP) addressing and network infrastructure services</p>
Lab	12	VIII	<p>ANALYSIS, OPTIMIZATION AND REPAIR TECHNIQUES FOR COMPUTER HARDWARE SYSTEMS</p> <p>A. Analysis of hardware components and peripherals using industry standard system integration techniques</p> <p>B. Optimization of computer systems and peripherals</p> <p>C. Detecting and correcting the lowest repairable hardware module</p> <p>D. Proper server maintenance techniques</p>
Lecture	6	IX	<p>ANALYSIS AND CONFIGURATION TECHNIQUES FOR COMPUTER SYSTEMS USING GRAPHICAL USER INTERFACE</p> <p>A. Troubleshooting server disaster recovery procedures and steps</p> <p>B. Optimization and restoration techniques for the graphical user interface</p>
Lab	8	X	<p>ANALYSIS AND CONFIGURATION TECHNIQUES FOR COMPUTER SYSTEMS USING GRAPHICAL USER INTERFACE</p> <p>A. Troubleshooting server disaster recovery procedures and steps</p> <p>B. Optimization and restoration techniques for the graphical user interface</p> <p>C. Storage technologies in a server system</p>
Lecture	6	XI	<p>COMMAND LINE TECHNIQUES FOR COMPUTER SYSTEMS</p> <p>A. Troubleshooting</p> <p>B. Optimization and restoration techniques for the command line interface</p> <p>C. Using command line to troubleshoot a problem server</p>

Lab	8	XII	COMMAND LINE TECHNIQUES FOR COMPUTER SYSTEMS A. Troubleshooting B. Optimization and restoration techniques for the command line interface in securing a server C. Identifying capacity and fault tolerance requirement in a server system
Lecture		36	
Lab		72	
Total Lecture Hours		108	

IV. PRIMARY METHOD OF EVALUATION AND SAMPLE ASSIGNMENTS

A. PRIMARY METHOD OF EVALUATION:

Problem solving demonstrations (computational or non-computational)

B. TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION:

You have been 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.

C. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS:

Provided with a misconfigured RAID 1 in a server that is configured as RAID 0 resulting in loss of data, write a two-page comprehensive report that shows logical steps to follow to reconfigure RAID 1 correctly that will preserve data in the server in case one of the hard drive fails in the server. Submit report to the instructor.

Provided with a computer system with a suspected hardware failure, determine if a hardware failure exists and write a lab report listing the logical steps required for resolving the hardware failure. Submit lab report to the instructor.

D. OTHER TYPICAL ASSESSMENT AND 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

V. 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)

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.

VI. WORK OUTSIDE OF CLASS

- Study
- Answer questions
- Skill practice
- Required reading
- Problem solving activities
- Written work

Estimated Independent Study Hours per Week: 4

VII. TEXTS AND MATERIALS

A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS

Troy McMillan, COMPTIA SERVER+ STUDY GUIDE EXAM SKO-004, 1ST edition, Sybex, 2016
Michael Covington and Douglas Downing, DICTIONARY OF COMPUTER AND INTERNET TERMS
11th ed, BARRON, 2013 - INDUSTRY STANDARD

Scott Mueller, UPGRADING AND REPAIRING PC'S, 22nd ed, PEARSON/QUE, 2015

B. ALTERNATIVE TEXTBOOKS

C. REQUIRED SUPPLEMENTARY READINGS

D. OTHER REQUIRED MATERIALS

- 2 Blank CD-RW disks
- 4 Blank DVD-RW disks
- 1 USB Flash Drive of at least 2GB of storage
- 1 - 3 Ring Binder - 1 1/2" hard cover

VIII. CONDITIONS OF ENROLLMENT

A. Requisites (Course and Non-Course Prerequisites and Corequisites)

Requisites	Category and Justification
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B. Requisite Skills

Requisite Skills

C. Recommended Preparations (Course and Non-Course)

Recommended Preparation	Category and Justification
Course Recommended Preparation Electronics and Computer Hardware Technology 140 or equivalent	
Non-Course Recommended Preparation Equivalent	If students have not taken ECHT 140 but have taken a similar course at another college or have understanding of basic computer hardware technology, they will be prepared to enroll in this course. It is recommended that students have basic computer hardware knowledge or they may not succeed in this class.

D. Recommended Skills

Recommended Skills
Understand computer system design and operational concepts. ECHT 140 - Understand the operating principals of computer system hardware.
Understand analog and digital concepts involving computer systems. ECHT 140 - Understand the operating principals of computer system hardware.
Assemble and disassemble personal computer systems, and install operating system software. ECHT 140 - Assemble and disassemble computersystems using industry standard techniques and safety procedures.

E. Enrollment Limitations

Enrollment Limitations and Category	Enrollment Limitations Impact
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Course created by Osanne Ugya on 09/01/1989

BOARD APPROVAL DATE: 03/12/1990

LAST BOARD APPROVAL DATE: 06/17/2019

Last Reviewed and/or Revised by: STEVE COCCA

Date: March 5, 2019