



El Camino College
 COURSE OUTLINE OF RECORD – Official

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| Course Acronym: | ECHT |
| Course Number: | 142 |
| Descriptive Title: | CompTIA Server+ Computer Hardware Systems II |
| Division: | Industry and Technology |
| Department: | Electronics and Computer Hardware Technology |
| Course Disciplines: | Electronic Technology, Electronics |
| Catalog Description: | <p>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.</p> <p>Note: Letter grade or pass/no pass option.</p> |
| Prerequisite: | |
| Co-requisite: | |
| Recommended Preparation: | Electronics and Computer Hardware Technology 140 |
| 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: | 03/18/2002 |
| Transfer UC: | No |
| Effective Date: | |
| General Education: ECC | |
| Term: | |
| Other: | |

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| CSU GE: | |
| Term: | |
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| IGETC: | |
| Term: | |
| Other: | |
| Student Learning Outcomes: | <p>SLO #1 Course Notebook</p> <p>The students will assemble and maintain a five-section course notebook.</p> <p>SLO #2 Troubleshooting Techniques</p> <p>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.</p> <p>SLO #3 OEM Specifications</p> <p>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.</p> |
| Course Objectives: | <ol style="list-style-type: none"> 1. Assemble, install, configure, optimize, and test computer hardware systems and peripherals. 2. Employ industry standard methodologies to evaluate computer hardware systems and peripherals. 3. Test and evaluate computer hardware systems, computer hardware components and peripherals, and trace faults to the lowest repairable module. 4. Employ comprehensive diagnostic software to evaluate and benchmark computer hardware system performance. 5. Select, analyze and apply video standards and display types for specific industry requirements and various user applications. 6. Select, analyze and apply printer standards and interfaces for specific industry requirements and various user applications. 7. Perform proper server maintenance and techniques. |
| Major Topics: | <p>I. OVERVIEW OF ADVANCED COMPUTER SYSTEMS AND HARDWARE TECHNOLOGIES WITH COMPTIA SERVER+ CERTIFICATION (1 hour, lecture)</p> <ol style="list-style-type: none"> A. Overview of the current state of computer hardware systems technologies B. Purpose and functions of server form factors <p>II. OVERVIEW OF ADVANCED COMPUTER SYSTEMS AND HARDWARE TECHNOLOGIES WITH COMPTIA SERVER+ CERTIFICATION (4 hours, lab)</p> <ol style="list-style-type: none"> A. Overview of the current state of computer hardware systems technologies B. Identification of server hardware types C. Different server types and features <p>III. COMPONENT IDENTIFICATION AND OPERATION PRINCIPALS FOR COMPUTER HARDWARE SYSTEMS (4 hours, lecture)</p> <ol style="list-style-type: none"> 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)

IV. COMPONENT IDENTIFICATION AND OPERATION PRINCIPALS FOR COMPUTER HARDWARE SYSTEMS (12 hours, lab)

- A. Identification and operating principals of advanced computer hardware system components and peripherals
- B. Installation of hard disc for Redundant Array of Independent Disks (RAID) configuration

V. INSTALLATION AND CONFIGURATION FOR COMPUTER HARDWARE SYSTEMS (8 hours, lecture)

- 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

VI. INSTALLATION AND CONFIGURATION FOR COMPUTER HARDWARE SYSTEMS (16 hours, lab)

- 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. Server roles and requirements

VII. ANALYSIS, OPTIMIZATION AND REPAIR TECHNIQUES FOR COMPUTER HARDWARE SYSTEMS (9 hours, lecture)

- A. Analysis of hardware components and peripherals using industry standard system integration techniques
- B. Optimization of computer systems and peripherals
- C. Detecting and correcting the lowest repairable hardware module
- D. Configuration of servers to use Internet Protocol (IP) addressing and network infrastructure services

VIII. ANALYSIS, OPTIMIZATION AND REPAIR TECHNIQUES FOR COMPUTER HARDWARE SYSTEMS (12 hours, lab)

- A. Analysis of hardware components and peripherals using industry standard system integration techniques
- B. Optimization of computer systems and peripherals
- C. Detecting and correcting the lowest repairable hardware module
- D. Proper server maintenance techniques

IX. ANALYSIS AND CONFIGURATION TECHNIQUES FOR COMPUTER SYSTEMS USING GRAPHICAL USER INTERFACE (6 hours, lecture)

- A. Troubleshooting server disaster recovery procedures and steps

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| | <p>B. Optimization and restoration techniques for the graphical user interface</p> <p>X. ANALYSIS AND CONFIGURATION TECHNIQUES FOR COMPUTER SYSTEMS USING GRAPHICAL USER INTERFACE (8 hours, lab)</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> <p>XI. COMMAND LINE TECHNIQUES FOR COMPUTER SYSTEMS (6 hours, lecture)</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> <p>XII. COMMAND LINE TECHNIQUES FOR COMPUTER SYSTEMS (8 hours, lab)</p> <p>A. Troubleshooting</p> <p>B. Optimization and restoration techniques for the command line interface in securing a server</p> <p>C. Identifying capacity and fault tolerance requirement in a server system</p> <p>XIII. SEMESTER PROJECT DEVELOPMENT (2 hours, lecture)</p> <p>A. Critical analysis</p> <p>B. Individual and group discussion</p> <p>C. Outlining template for term project</p> <p>XIV. SEMESTER PROJECT DEVELOPMENT (12 hours, lab)</p> <p>A. Critical analysis</p> <p>B. Individual and group discussion</p> <p>C. Presentation of term project</p> |
| 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: | 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. |
| Critical Thinking Assignment 1: | 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 |

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| | 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. |
| Critical Thinking Assignment 2: | 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. |
| Other Evaluation Methods: | <ul style="list-style-type: none"> 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: | <ul style="list-style-type: none"> Demonstration Discussion Group Activities Guest Speakers Lab Lecture Multimedia Presentations |
| If other: | |
| Work Outside of Class: | <ul style="list-style-type: none"> Answer questions Problem solving activity Required reading Skill practice Study Written work (such as essay/composition/report/analysis/research) |
| If Other: | |
| Up-To-Date Representative Textbooks: | Troy McMillan, <u>COMPTIA SERVER+ STUDY GUIDE EXAM SKO-005</u> , 2 nd edition, Sybex, 2023 |
| Alternative Textbooks: | Daniel Lachance, <u>COMPTIA SERVER+ Certification All-in-One EXAM SKO-005</u> , 2 ST edition, McGraw Hill, 2023 |
| Required Supplementary Readings: | |
| Other Required Materials: | <ul style="list-style-type: none"> 2 Blank CD-RW disks 4 Blank DVD-RW disks 1 USB Flash Drive of at least 8GB of storage 1 - 3 Ring Binder - 1 1/2" hard cover |
| Requisite: | |

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| 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 Technology 140 |
| Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s). | <p>Understand computer system design and operational concepts. ECHT 140 - Understand the operating principals of computer system hardware.</p> <p>Understand analog and digital concepts involving computer systems. ECHT 140 - Understand the operating principals of computer system hardware.</p> <p>Assemble and disassemble personal computer systems and install operating system software. ECHT 140 - Assemble and disassemble computer systems using industry standard techniques and safety procedures.</p> |
| Requisite Skill: | |
| Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable | |
| 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 |

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| Date: | 01/05/2023 |
| Last Board Approval Date: | 07/17/2023 effective FALL 2024 |