Cerro Coso College

Course Outline of Record Report

10/12/2021

ITC248 : System and Network Administration

General Information

Author:	• Valerie Karnes • Hightower, Matthew • Harper, Christopher • Bennett, Keith
Course Code (CB01) :	ITC248
Course Title (CB02) :	System and Network Administration
Department:	Business Information Technolog
Proposal Start:	Spring 2019
TOP Code (CB03) :	(0708.10) Computer Networking
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	Yes
Course Control Number (CB00) :	CCC000574154
Curriculum Committee Approval Date:	03/16/2018
Board of Trustees Approval Date:	06/14/2018
External Review Approval Date:	Pending
Course Description:	This course provides students with the knowledge and skills required to build, maintain, troubleshoot and support server hardware and software technologies. Topics include environmental issues; disaster recovery and physical / software security procedures; industry terminology and concepts; server roles/specializations; and interaction within the overall computing environment. This course prepares students for the current version of CompTIA's Server+ certification exam. Note: This course was formerly CSCI C193.
Submission Type:	Improvement to Program of Study Per program review, changing CSCI to IT designation for program clarity and SLO assessment data. Also, renumbered course to reflect sequence for students.
Author:	No value

Faculty Minimum Qualifications

Master Discipline Preferred:	• Computer Information Systems (Computer network installation, microcomputer technology, computer applications) • Computer Science
Alternate Master Discipline Preferred:	• Computer Information Systems (Computer network installation, microcomputer technology, computer applications) • Computer Science
Bachelors or Associates Discipline Preferred:	• Computer Information Systems (Computer network installation, microcomputer technology, computer applications) • Computer Service Technology
Additional Bachelors or Associates Discipline Preferred:	• Computer Information Systems (Computer network installation, microcomputer technology, computer applications) • Computer Science

Course Development Options

Basic Skills Status (CB08)

Course is not a basic skills course.

☐ Allow Students to Gain Credit by Exam/Challenge

Rationale For Credit By Exam/Challenge

No value

Course Support Course Status (CB26)

No value

Course Special Class Status (CB13)

Course is not a special class.

Allowed Number of Retakes

0

Retake Policy Description

Type:|Non-Repeatable Credit

Grade Options

- Letter Grade Methods

Course Prior To College Level (CB21)

Not applicable.

☑ Allow Students To Audit Course

Associated Programs

☑ Course is part of a program (CB24)

Associated Program	Award Type	Active
Cyber Security Technology	A.S. Degree Major	Spring 2018
Cyber Security Technician	Certificate of Achievement	Spring 2018

Transferability & Gen. Ed. Options

Course General Education Status (CB25)

No value

Transferability

Transferable to CSU only

Transferability Status

Approved

Units and Hours

Summary

Minimum Credit Units (CB07)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	72
Total Course Out-of-Class Hours	90

Total Student Learning Hours	162
Faculty Load	0

Credit / Non-Credit Options

Course Credit Status (CB04)

Credit - Degree Applicable

Course Non Credit Category (CB22)

Credit Course.

Non-Credit Characteristic

No Value

Course Classification Status (CB11)

Credit Course.

Funding Agency Category (CB23)

Not Applicable.

☐ Cooperative Work Experience Education Status (CB10)

☐ Variable Credit Course

Weekly Student Hours

	In Class	Out of Classs
Lecture Hours	2.5	5
Laboratory Hours	1.5	0
Activity Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54
Course In-Class (Contact) Hours	
Lecture	45
Laboratory	27
Activity	0
Total	72
Course Out-of-Class Hours	
Lecture	90
Laboratory	0
Activity	0
Total	90

Time Commitment Notes for Students

No value

Faculty Load

Extra Duties: 0

Faculty Load: 0

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Prerequisite

ITC101 - Introduction to Computer Information Systems

Students need to be able to install their own software and understand what memory is, how to zip and unzip files, how to save and find their files, and how to utilize a computer's operating system (Windows, Apple and Linux) and application software. This material is covered in the CSCI C101/IT C101 course.

AND

Advisory

ITC143 - Computer Network Fundamentals

Students need a basic understanding of networking terminology, network structure to transfer that knowledge to network security. This material is covered in the CSCI C193/IT C143 course.

Entrance Skills

Entrance Skills	Description
No value	No value

Limitations on Enrollment

Limitations on Enrollment	Description
No value	No value

Specifications

Methods of Instruction

Methods of Instruction	Outside reading
Rationale	Textbook and Electronic Readings
Methods of Instruction	Problem Solving
Rationale	No value
Methods of Instruction	Project-based learning
Rationale	No value

Methods of Instruction	Audiovisual
Rationale	Pre-recorded Training Videos

Methods of Instruction	Lecture
Rationale	No value

Methods of Instruction	Presentations (by students)
Rationale	No value

Methods of Instruction	Laboratory
Rationale	No value

Methods of Instruction	Discussion
Rationale	No value

Methods of Instruction	Demonstration
Rationale	No value

Assignments

A. Chapter reading (Example: Reading the assigned chapters from the textbook based on the topics for the week).
B. Research and analysis projects (Example: Research system log events to determine the source of a server configuration error).
C. Simulation and lab assignments (Example: Install Active Directory in a virtual environment.).

Methods of Evaluation	Rationale
Final Exam	Comprehensive Exam: A comprehensive exam in a proctored environment will evaluate a students preparedness for the Server+ exam.
Tests	Objective Exams: Objective exams will evaluate the student's comprehension of text material and prepare them for the Server+ certification exam environment.
Homework	Hands-on simulations: Activities will reinforce the practical application of theories presented in the text. Simulations will also provide insight and training into real-world tasks for IT Professionals. For example, install Active Directory in a simulated environment. The simulation requires students to complete a series of tasks and submit their results which are scored on a rubric.
Participation	Discussions: Students will participate in discussions to critically explore concepts and compare elements of the text. For example: Discuss best practices for applying permissions to users in Active Directory.

Equipment

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
	Limoncelli, T., Hogan C. & Chalup, S. . (2016) The Practice of System and Network Administration, 3rd, Addison-Wesley			

Other Instructional Materials

No Value

Materials Fee

No

Learning Outcomes and Objectives

Course Objectives

Examine server fundamentals.

Identify the hardware components of a server.

Describe the features of server software.

Examine the various types of storage systems used in servers.

Install hardware components on a server.

Configure servers.

Examine the issues in upgrading server components.

Identify some of the industry's best practices for deploying a server and the various strategies of securing, accessing, and remotely managing the server hardware.

Troubleshoot servers.

Describe disaster recovery concepts and techniques.

CSLOs

Evaluate the hardware components and software features used in an operating server environment. Expected SLO Performance: 70.0

Install, configure, and troubleshoot servers in the deployment and maintenance of an operating server environment. Expected SLO Performance: 70.0

Propose server design solutions using industry best practices to include deployment, configuration, maintenance, administration, and disaster recovery of an operating server environment. Expected SLO Performance: 70.0

Outline

Course Outline

- Introduction to servers
    a. Examine the network architecture
    b. Identify common server types and functions
- Exploring the server hardware
    a. Identify server system board components
    b. Explore system processing core
    c. Explore server memory
    d. Examine server cooling and power systems
- Introduction to server software
    a. Describe server software
    b. Network operating system (NOS) management features
    c. Network operating system (NOS) security features
    d. Network essentials for servers
- Exploring the server storage system
    a. Examine storage devices used for servers
    b. Exploring disk interfaces, such as Integrated Drive Electronics (IDE) and Small Computer System Interface (SCSI)
    c. Describe Random Arrays of Independent Disks (RAID)
    d. Explore Network-Attached Storage (NAS) implementations
    e. Explore Storage Area Network (SAN) implementations
- Installing the server hardware
    a. Identify the best practices in server hardware installation
    b. Install hardware components on a server
    c. Verify server installation
    d. Install a server in a network environment
- Configuring servers
    a. Network operating system (NOS) installation and verification
    b. Install system monitoring agents and service tools
    c. Server configuration documentation
- Examining the issues in upgrading server components
    a. Examine an upgrade checklist
    b. Examine the issues in upgrading server hardware
    c. Examine the issues in upgrading server software
- Examining servers in an it environment
    a. Industry best practices for server installation and maintenance
    b. Server security and access methods
- Troubleshooting servers
    a. Examine the troubleshooting theory and methodologies
    b. Troubleshoot server hardware problems
    c. Troubleshoot server software problems

    d. Troubleshoot server network problems
    e. Troubleshoot server storage device problems
- Exploring disaster recovery concepts and methodologies
    a. Examine disaster recovery plans
    b. Implement disaster recovery methodologies
    c. Implement replication methods

Lab Outline

1. Installing Server Operating Systems
2. Installing and Configuring Active Directory
3. Configuring Server Security Permissions
4. Monitoring Server Performance

Delivery Methods and Distance Education

Delivery Method: Please list all that apply -Face to face -Online (purely online no face-to-face contact) -Online with some required face-to-face meetings ("Hybrid") -Online course with on ground testing -iTV – Interactive video = Face to face course with significant required activities in a distance modality -Other

Face 2 Face
Online
Hybrid
Interactive

Rigor Statement: Assignments and evaluations should be of the same rigor as those used in the on-ground course. If they are not the same as those noted in the COR on the Methods of Evaluation and out-of-class assignments pages, indicate what the differences are and why they are being used. For instance, if labs, field trips, or site visits are required in the face to face section of this course, how will these requirements be met with the same rigor in the Distance Education section?

All assignments in distance education courses (online, hybrid and iTV) of IT C248 are of the same rigor as those in the on-ground course, except that students in purely online sections will submit all of their assignments virtually. The use of industry-standard software and a simulation manual instructs students to complete a series of tasks and provides detailed documentation of their results to the instructor. The instructor reviews the student's results and provides feedback to the students on skill development and selection of the correct methods. The instructor can view students' step-by-step actions to provide feedback and guide their learning. The instructor does provide detailed feedback to students to guide their learning. Instructor evaluation of student work in distance education courses is the same as in the on-ground course, except that evaluation of student work in online is presented virtually. Instead of on-site lectures, hybrid and online courses use a variety of methods including, but not limited to videos, interactive simulations and written lecture notes.

Effective Student-Instructor Contact: Good practice requires both asynchronous and synchronous contact for effective contact. List the methods expected of all instructors teaching the course. -Learning Management System -Discussion Forums -Moodle Message -Other Contact -Chat/Instant Messaging -E-mail -Face-to-face meeting(s) -Newsgroup/Discussion Board -Proctored Exam -Telephone -iTV -Interactive Video -Other (specify)

chat
email
discussion
itv

Software and Equipment: What additional software or hardware, if any, is required for this course purely because of its delivery mode? How is technical support to be provided?

For face to face delivery, a 3 node server cluster running VMWare ESXi or Hyper-V which can be used to host virtual environments. Network equipment to establish a private network to provide connectivity to the class servers. Modern workstations with wired

Accessibility: Section 508 of the Rehabilitation Act requires access to the Federal government's electronic and information technology. The law covers all types of electronic and information technology in the Federal sector and is not limited to assistive technologies used by people with disabilities. It applies to all Federal agencies when they develop, procure, maintain, or use such technology. Federal agencies must ensure that this technology is accessible to employees and the public to the extent it does not pose an "undue burden". I am using -iTV—Interactive Video only -Learning management system -Publisher course with learning management system interface.

itv
publisher

Class Size: Good practice is that section size should be no greater in distance ed modes than in regular face-to-face versions of the course. Will the recommended section size be lower than in on-ground sections? If so, explain why.

No Value