Cerro Coso College

Course Outline of Record Report

10/12/2021

ITC280 : Introduction to Cloud Computing

General Information

Author:	• Sarah King
Course Code (CB01) :	ITC280
Course Title (CB02) :	Introduction to Cloud Computing
Department:	Business Information Technolog
Proposal Start:	Spring 2021
TOP Code (CB03) :	(0701.00) Information Technology, General
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	Yes
Course Control Number (CB00) :	No value
Curriculum Committee Approval Date:	03/06/2020
Board of Trustees Approval Date:	04/09/2020
External Review Approval Date:	04/09/2020
Course Description:	This course provides introductory skills in cloud computing. It is aligned with the CompTIA Cloud Essentials+ certification and the Amazon Web Services (AWS) Certified Cloud Practitioner (CLF).
Submission Type:	Mandatory Revision
Author:	No value

Faculty Minimum Qualifications

Master Discipline Preferred:	• Computer Information Systems (Computer network installation, microcomputer technology, computer applications)
Alternate Master Discipline Preferred:	No value
Bachelors or Associates Discipline Preferred:	• Computer Information Systems (Computer network installation, microcomputer technology, computer applications) • Computer Science
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.

Course Special Class Status (CB13)

Course is not a special class.

Grade Options

- Letter Grade Methods

☐ Allow Students to Gain Credit by Exam/Challenge

Allowed Number of Retakes

Course Prior To College Level (CB21)

Exam/Challenge	3	Not applicable.

Rationale For Credit By Exam/Challenge

No value

Retake Policy Description

No value

☑ Allow Students To Audit Course

Course Support Course Status (CB26)

No value

Associated Programs

☑ Course is part of a program (CB24)

Associated Program	Award Type	Active
Cloud Computing	Certificate of Achievement	Fall 2020 to Spring 2021

Transferability & Gen. Ed. Options

Course General Education Status (CB25)

Y

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	90
Total Course Out-of-Class Hours	72
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)

No value

☐ Cooperative Work Experience Education Status (CB10)

☐ Variable Credit Course

Weekly Student Hours

	In Class	Out of Classs
Lecture Hours	2	4
Laboratory Hours	3	0
Activity Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54
Course In-Class (Contact) Hours	
Lecture	36
Laboratory	54
Activity	0
Total	90
Course Out-of-Class Hours	
Lecture	72
Laboratory	0
Activity	0
Total	72

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 identify hardware components of a computer system, understand the basics of operating systems and application software, install software, understand what memory is, how to zip and unzip files, how to save and find files and understand the basics of network topology. This material is covered in the IT C101 course.

AND

Advisory

ITC142 - Information & Communication Technology Essentials

Students need to know the essential skills for individual computer repair to assist them as they complete the skills for an Information Technology Technician. These skills include computer hardware identification and basics of building a computer to include the installation of components (power supplies, motherboards, processors, memory, and expansion card). In addition, students need to have experience and knowledge of installing and configuring operating systems, application software and updates. This material is covered in the IT C142/CSCI C142 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 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	Instruction through examination or quizzing
Rationale	Students will complete quizzes and examinations within the courses (online and on ground). This will include short answer and multiple-choice questions.

Methods of Instruction	Discussion
Rationale	Discussion: Students will participate to critically explore concepts and compare elements of the text, simulations or projects. The topics for discussion for the online or on-ground classes will be the same. Subjects

for the discussion will include relevant topics to the reading material, weekly lab simulations, and projects. Example: Discuss use cases in which a serverless compute function would be better than setting up a server.

Online: Students will participate in weekly discussions. Students will post one individual initial posting per week and reply to a minimum of two classmates. The instructor will also participate in the board and the student replies. For example, the instructor may rotate through one-half of the class each week to reply to all students equally throughout the course.

On-ground: Students will participate in class discussions with the instructor or/and fellow students.

Methods of Instruction	Laboratory
Rationale	Hands-on Lab: Computer-based training will reinforce the practical application of theories presented in the text. Labs will also provide insight and training into real-world tasks for Cloud administrators. Example: Create a virtual host in the AWS cloud.

Methods of Instruction	Lecture
Rationale	Weekly lecture notes are provided that include language to describe course concepts and further students understanding and preparedness to work in a cloud-based environment. Students will also view PowerPoint presentations with content from each module.

Assignments

A. Chapter reading (Example: Reading the assigned chapters from the textbook based on the topics for the week).
B. Weekly step-by-step assignments (Example - Explain fundamental concepts related to setting up a service in a cloud platform).
C. Weekly application simulations assignments (Example: Create and provision storage in a cloud environment)

Methods of Evaluation	Rationale
Participation	Discussions: Students will participate in discussions to critically explore concepts and compare elements of the text and computer-based training. Grading is done with a rubric and instructors evaluate student posts to determine they understand the concepts responding both in the discussion area and through the grading section. For example: Discussing the benefits of block vs file-based cloud storage.
Tests	Objective Exams: Objective exams will evaluate the student's comprehension of text material and prepare them for the AWS Certified Cloud Practitioner and CompTIA Cloud Essentials exams. Example: Describe the advantages and disadvantages of cloud storage for business.
Homework	Hands-on simulations: Computer-based simulations/labs/activities will reinforce the practical application of theories presented in the text and their preparedness. Simulations will also provide insight and training into real-world tasks for IT Professionals. Labs/activities are evaluated by reviewing the steps/scores students take through the labs to demonstrate competency.

	For example, configuring cloud storage. The simulation requires students to complete a series of tasks and submit their results which are scored on a rubric.
Distance Education Description: how outcomes are evaluated	Assignments for the online course are in line and similar to the assignments that are offered on ground. The SLO's are assessed through rubric and objective assignments such as discussion boards, exams, and homework.

Equipment

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Quentin Docter, Cory Fuchs	CompTIA Cloud Essentials+ Study Guide: Exam CLO-002	Sybex	January 22, 2020	978-1119642220

Other Instructional Materials

Description	AWS Academy Cloud Foundations. This computer-based training is intended for students who seek an overall understanding of cloud computing concepts, independent of specific technical roles. It provides a detailed overview of cloud concepts, AWS core services, security, architecture, pricing, and support.
Author	AWS Academy
Citation	No value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Create a host in a cloud platform.

Provision storage in a cloud platform

Identify cloud storage technologies.

Summarize important aspects of cloud design

Summarize the financial aspects of engaging a cloud provider.

Identify security aspects unique to cloud-hosted infrastructure.

Explain aspects of operating within the cloud

Explain security concerns, measures, or concepts of cloud operations.

CSLOs

Compare and contrast different cloud networking services. Expected SLO Performance: 70.0

Perform administrative duties such as managing users, roles, networks and storage in a cloud environment. Expected SLO Performance: 70.0

Compare and contrast cloud migration approaches. Expected SLO Performance: 70.0

Analyze a traditional on-premise network and develop a plan for migration to a cloud platform taking into account financial and technical constraints. Expected SLO Performance: 70.0

Outline

Course Outline

1. Cloud concepts
    a. Explain cloud principles
        1. Service models
        2. Deployment models
        3. Characteristics
        4. Shared responsibility model
    b. Identify cloud networking concepts
        1. Connectivity types
        2. Common access types
        3. Software-defined networking
        4. Load balancing
        5. DNS
        6. Firewall
    c. Identify cloud storage technologies
        1. Storage features
        2. Storage characteristics
        3. Storage types
        4. Software-defined storage
        5. Content delivery network
    d. Summarize important aspects of cloud design

1. Redundancy
2. High availability
3. Disaster recovery
4. Recovery objectives

2. Business principles of cloud environments
    a. Given a scenario, use appropriate cloud assessments
        1. Current and future requirements
        2. Baselines
        3. Feasibility studies
        4. Gap analysis
        5. Reporting
        6. Benchmarks
        7. Documentation and diagrams
        8. Key stakeholders
        9. Points of contact
    b. Summarize the financial aspects of engaging a cloud provider
        1. Capital expenditures
        2. Operating expenditures
        3. Variable vs. fixed cost
        4. Licensing models
        5. Contracts
        6. Billing
        7. Request for information
        8. Human capital
    c. Identify the important business aspects of vendor relations in cloud adoptions
        1. Professional services
        2. Statement of work
        3. Service level agreements
        4. Training
        5. Evaluations
        6. Open-source vs proprietary
    d. Identify the benefits or solutions of utilizing cloud services
        1. Identity access management
        2. Cloud-native applications
        3. Data analytics
        4. Digital marketing
        5. Autonomous environments
        6. IoT
        7. Blockchain
        8. Subscription services
        9. Collaboration
        10. VDI
        11. Self-service
    e. Compare and contrast cloud migration approaches.
        1. Rip and replace
        2. Lift and shift

        3. Hybrid
        4. Phased
3. Management and Technical Operations
    a. Explain aspects of operating within the cloud.
        1. Data management
        2. Availability
        3. Disposable resources
        4. Monitoring and visibility
        5. Optimization
    b. Explain DevOps in cloud environments.
        1. Provisioning
        2. Continuous integration/ continuous delivery
        3. Testing in QA environments
        4. Configuration management
        5. API integration
    c. Given a scenario, review, and report on the financial expenditures related to cloud resources
        1. Storage
        2. Network
        3. Compute
        4. Chargebacks
        5. Maintenance
        6. Instances
        7. Licensing type
        8. Licensing quantity
4. Governance, risk, compliance, and security for the cloud
    a. Recognize risk management concepts related to cloud services
        1. Risk assessment
        2. Risk response
        3. Documentation
        4. Vendor lock-in
        5. Data portability
    b. Explain policies or procedures
        1. Standard operating procedures
        2. Change management
        3. Resource management
        4. Security policies
        5. Access and control policies
        6. Department-specific policies
        7. Communication policies
    c. Identify the importance and impacts of compliance in the cloud
        1. Data sovereignty
        2. Regulatory concerns
        3. Industry-based requirements
        4. International standards
        5. Certifications
    d. Explain security concerns, measures, or concepts of cloud operations.

1. Threat
2. Vulnerability
3. Security assessments
4. Data security
5. Application and Infrastructure security

Lab Outline

1. Create an account and begin management of cloud infrastructure
2. Build a virtual private cloud
3. Launch a server in a VPC
4. Manage, monitor, and resize a virtual computing instance.
5. Provision and attach storage in a virtual platform
6. Backup cloud storage
7. Build a database in a virtual cloud
8. Scale and load balance cloud resources

OLD 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

No Value

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?

No Value

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 -Message -Other Contact -Chat/Instant Messaging -E-mail -Face-to-face meeting(s) -Newsgroup/Discussion Board -Proctored Exam -Telephone -iTV - Interactive Video -Other (specify)

No Value

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?

No Value

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.

No Value

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