

CNSE M111: AZURE CLOUD FUNDAMENTALS

Originator

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College

Moorpark College

Attach Support Documentation (as needed)

LAPC CIS 238.pdf

SMC CS 79Z Azure.pdf

CCSF CNIT 420.pdf

Discipline (CB01A)

CNSE - Computer Netwrk Sys. Engr. Prg

Course Number (CB01B)

M111

Course Title (CB02)

Azure Cloud Fundamentals

Banner/Short Title

Azure Cloud Fundamentals

Credit Type

Credit

Honors

No

Start Term

Fall 2021

Catalog Course Description

Provides training for students who seek an understanding of Microsoft cloud fundamentals. Covers Azure services and resource subscriptions, storage, virtual machine management, virtual networks, active directory identities, core services, security and compliance, pricing, and cloud management tools. Aligns to current Microsoft Azure cloud certification.

Additional Catalog Notes

This course helps prepare students to pass the Microsoft Azure Certification.

Taxonomy of Programs (TOP) Code (CB03)

0708.00 - *Computer Infrastructure and Support

Course Credit Status (CB04)

D (Credit - Degree Applicable)

Course Transfer Status (CB05) (select one only)

B (Transferable to CSU only)

Course Basic Skills Status (CB08)

N - The Course is Not a Basic Skills Course

SAM Priority Code (CB09)

C - Clearly Occupational

Course Cooperative Work Experience Education Status (CB10)

N - Is Not Part of a Cooperative Work Experience Education Program

Course Classification Status (CB11)

Y - Credit Course

Educational Assistance Class Instruction (Approved Special Class) (CB13)

N - The Course is Not an Approved Special Class

Course Prior to Transfer Level (CB21)

Y - Not Applicable

Course Noncredit Category (CB22)

Y - Credit Course

Funding Agency Category (CB23)

Y - Not Applicable (Funding Not Used)

Course Program Status (CB24)

1 - Program Applicable

General Education Status (CB25)

Y - Not Applicable

Support Course Status (CB26)

N - Course is not a support course

Field trips

Will not be required

Grading method

Letter Graded

Alternate grading methods

Credit by exam, license, etc.

Does this course require an instructional materials fee?

No

Repeatable for Credit

No

Is this course part of a family?

No

Units and Hours

Carnegie Unit Override

No

In-Class

Lecture

Minimum Contact/In-Class Lecture Hours

35

Maximum Contact/In-Class Lecture Hours

35

Activity

Laboratory

Minimum Contact/In-Class Laboratory Hours

52.5

Maximum Contact/In-Class Laboratory Hours

52.5

Total in-Class

Total in-Class

Total Minimum Contact/In-Class Hours

87.5

Total Maximum Contact/In-Class Hours

87.5

Outside-of-Class

Internship/Cooperative Work Experience

Paid

Unpaid

Total Outside-of-Class

Total Outside-of-Class

Minimum Outside-of-Class Hours

70

Maximum Outside-of-Class Hours

70

Total Student Learning

Total Student Learning

Total Minimum Student Learning Hours

157.5

Total Maximum Student Learning Hours

157.5

Minimum Units (CB07)

3

Maximum Units (CB06)

3

Student Learning Outcomes (CSLOs)

Upon satisfactory completion of the course, students will be able to:

- | | |
|---|--|
| 1 | explain cloud infrastructure services, applications and environments |
| 2 | make recommendations on services, performance, provisioning, and resource allocation |

Course Objectives

Upon satisfactory completion of the course, students will be able to:

- | | |
|---|---|
| 1 | manage Azure subscriptions and resource groups |
| 2 | manage role based access control and determine how to create and configure storage accounts |
| 3 | determine how to create and configure storage accounts and how to import and export data to Azure |
| 4 | configure Azure files and how to implement Azure backup |

- 5 create and configure a VM for Windows and Linux, and automate and manage virtual machine deployments
- 6 configure and and maange virtual networks
- 7 configure: name resolution, load balancer, and network security groups.
- 8 integrate on premises network with Azure virtual network
- 9 manage identities in Active Directory, users, groups, services
- 10 manage security including multi-factor authentication
- 11 describe core Azure cloud services, costs and service level agreements
- 12 describe sore solutions and Azure management tools
- 13 describe general security and network security features
- 14 describe identity, governance, privacy, and compliance features.

Course Content

Lecture/Course Content

- **10% - Manage Azure identities and governance**
 - Manage Azure AD objects
 - Manage role-based access control (RBAC)
 - Manage subscriptions and governance
- **5% - Implement and manage storage**
 - Manage storage accounts
 - Manage data in Azure Storage
 - Configure Azure files and Azure blob storage
- **20% - Deploy and manage Azure compute resources**
 - Configure VMs for high availability and scalability
 - Automate deployment and configuration of VMs
 - Create and configure VMs
 - Create and configure containers
 - Create and configure Web Apps
- **15% - Configure and manage virtual networking**
 - Implement and manage virtual networking
 - Configure name resolution
 - Secure access to virtual networks
 - Configure load balancing
 - Monitor and troubleshoot virtual networking
 - Integrate an on-premises network with an Azure virtual network
- **10% - Monitor and back up Azure resources**
 - Monitor resources by using Azure Monitor
 - Implement backup and recovery
- **5% - Describe Cloud Concepts**
 - Describe the benefits and considerations of using cloud services
 - Describe the differences between Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS)
 - Describe the differences between Public, Private and Hybrid cloud models
- **5% - Describe Core Azure Services**
 - Describe the core Azure architectural components
 - Describe some of the core products available in Azure
 - Describe some of the solutions available on Azure
 - Describe Azure management tool
- **20% Describe Security, Privacy, Compliance, and Trust**
 - Describe securing network connectivity in Azure
 - Describe core Azure Identity services
 - Describe security tools and features of Azure
 - Describe Azure governance methodologies
 - Describe monitoring and reporting options in Azure
 - Describe privacy, compliance and data protection standards in Azure
- **10% Describe Azure Pricing, Service Level Agreements, and Lifecycles**

- Describe Azure subscriptions
- Describe planning and management of costs
- Describe Azure Service Level Agreements (SLAs)
- Describe service lifecycle in Azure

Laboratory or Activity Content

- **5% Lab : Create and manage a virtual machine**
- **5% Lab : Deploy Azure container instances**
- **5% Lab : Create a virtual network**
- **5% Lab : Create and manage blob storage**
- **5% Lab : Create an SQL database**
- **5% Lab : Implement an Azure IoT Hub**
- **5% Lab : Implement Azure Functions**
- **5% Lab : Create a web app**
- **5% Lab : Create a VM with a Template**
- **5% Lab : Create a VM with PowerShell**
- **5% Lab : Create a VM with CLI**
- **5% Lab : Manage Azure Active Directory Identities**
- **5% Lab : Manage Subscriptions and RBAC**
- **5% Lab : Manage Governance via Azure Policy**
- **5% Lab : Manage Azure resources by Using the Azure Portal**
- **5% Lab : Manage Azure resources by Using ARM Templates**
- **5% Lab : Implement Azure Container Instances**
- **5% Lab : Implement Azure Kubernetes Service**
- **5% Lab : Implement Data Protection**
- **5% Lab : Implement Monitoring**

Methods of Evaluation

Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):

Problem solving exercises
Skills demonstrations

Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):

Computational homework
Group projects
Individual projects
Laboratory activities
Laboratory reports
Oral analysis/critiques
Objective exams
Oral presentations
Other (specify)
Problem-solving exams
Quizzes
Reports/papers
Skills demonstrations
Skill tests or practical examinations
Simulations

Other

Passing Cloud relevant certification

Instructional Methodology

Specify the methods of instruction that may be employed in this course

Audio-visual presentations
Computer-aided presentations

Collaborative group work
 Class activities
 Case studies
 Distance Education
 Group discussions
 Guest speakers
 Instructor-guided interpretation and analysis
 Instructor-guided use of technology
 Internet research
 Laboratory activities
 Lecture
 Small group activities

Describe specific examples of the methods the instructor will use:

Instructor will integrate a learning management system, e.g., Canvas, for supplemental support such as providing lab supplemental materials and whitepapers. Curriculum may be provided via Microsoft Azure training portal for viewing lectures, labs, demonstrations, and knowledge assessments.

Lab: Instructor will provide instructions on lab exercises along with screen prints explaining detailed steps. Labs will include instructor's comments and observations for students to note while completing labs. Students will be expected to complete labs multiple times and be able to explain why specific configurations are being deployed. Students are also expected to troubleshoot and verify working cloud configurations. Students will submit labs that are automatically scored online and submit completion scores as evidence of completion using a learning management system (LMS), for example, Canvas or Blackboard. Labs utilize a credit system which provides a sandboxed cloud configuration environment of equipment, resources, and services at no cost to the student and is subsidized through Microsoft Azure portal.

Representative Course Assignments

Writing Assignments

1. Write about solutions and best practices that a cloud environment provides.
2. Write technical explanations of cloud configuration.
3. Develop written explanation of specific cloud service along with its benefits.

Critical Thinking Assignments

1. Provide a performance solution that improves a cloud architecture.
2. Provide a reliability, scalability, or availability solution that improves a cloud configuration.
3. Provide a security strategy that improves an existing cloud configuration security posture.
4. Migrate an existing in-house configuration to the cloud and explain the benefits of the new cloud architecture.

Reading Assignments

1. Review and explain the benefits of various Azure services.
2. Review in depth a specific cloud service from Azure.
3. Review a whitepaper and provide a short explanation of the benefit of this architecture or service, best practice, or recommendation.
4. Review prominent Azure whitepapers such as Best Practices.

Skills Demonstrations

1. Given a list of cloud requirements, complete a semi-complex lab architecture without having detailed step-by-step instructions.
2. Given an on-premise topology, recommend a cloud migration pathway.
3. Given a cloud configuration diagram, configure the necessary components and services that meet the technical requirements.
4. Given a cloud architecture, explain the benefits and best practices of that specific deployment in the cloud.

Outside Assignments

Representative Outside Assignments

1. Research topics related to new cloud solutions.
2. Research new cloud tools and how they provide modern solutions in system and network protection.
3. Migrate an existing in-house configuration to the cloud and explain the benefits of the new cloud architecture.
4. Research and explain cloud case studies.
5. Provide an analysis of specific cloud whitepapers.

Articulation

Equivalent Courses at other CCCs

College	Course ID	Course Title	Units
City College of San Francisco	CNIT 420	Configuring and Administering Microsoft Azure	3
Santa Monica College	CS 79Z	Microsoft Azure Essentials	3
LA Pierce College	CIS 238	Managing Windows with Azure	3

District General Education

A. Natural Sciences

B. Social and Behavioral Sciences

C. Humanities

D. Language and Rationality

E. Health and Physical Education/Kinesiology

F. Ethnic Studies/Gender Studies

Course is CSU transferable

Yes

CSU Baccalaureate List effective term:

Fall 2021

CSU GE-Breadth

Area A: English Language Communication and Critical Thinking

Area B: Scientific Inquiry and Quantitative Reasoning

Area C: Arts and Humanities

Area D: Social Sciences

Area E: Lifelong Learning and Self-Development

Area F: Ethnic Studies

CSU Graduation Requirement in U.S. History, Constitution and American Ideals:

IGETC

Area 1: English Communication

Area 2A: Mathematical Concepts & Quantitative Reasoning

Area 3: Arts and Humanities

Area 4: Social and Behavioral Sciences

Area 5: Physical and Biological Sciences

Area 6: Languages Other than English (LOTE)

Textbooks and Lab Manuals

Resource Type

Textbook

Classic Textbook

No

Description

Patel, Harshul, et al. *Exam Ref AZ-104 Microsoft Azure Administrator*. Microsoft Press, 2021.

Resource Type

Textbook

Description

Cheshire, Jim. *Exam Ref AZ-900 Microsoft Azure Fundamentals*. 2nd ed., Microsoft Press, 2020.

Library Resources

Assignments requiring library resources

Research, using the Library's print and online resources.

Sufficient Library Resources exist

Yes

Example of Assignments Requiring Library Resources

Research for a paper on topics such as modern security tools, modern threats and vulnerabilities, and data analysis.

Distance Education Addendum

Definitions

Distance Education Modalities

Hybrid (51%–99% online)
 Hybrid (1%–50% online)
 100% online

Faculty Certifications

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.

Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.

Yes

Regular Effective/Substantive Contact

Hybrid (1%–50% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Other DE (e.g., recorded lectures)	Same as 100% online but done in front of a classroom with supportive explanation.

Hybrid (51%–99% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Other DE (e.g., recorded lectures)	Same as 100% online but done in front of a classroom with supportive explanation.

100% online Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Other DE (e.g., recorded lectures)	100% online but additional supplemental materials provided including on campus availability and Zoom conferences as optional student support.

Examinations

Hybrid (1%–50% online) Modality

Online
 On campus

Hybrid (51%–99% online) Modality

Online
 On campus

Primary Minimum Qualification

COMPUTER INFORMATION SYS

Additional local certifications required

7+ years of Info Technology experience and a relevant Cloud Certification.

Review and Approval Dates

Department Chair

10/19/2020

Dean

10/26/2020

Technical Review

11/5/2020

Curriculum Committee

11/15/2020

DTRW-I

12/10/2020

Curriculum Committee

MM/DD/YYYY

Board

MM/DD/YYYY

CCCCO

MM/DD/YYYY

Control Number

CCC000616422

DOE/accreditation approval date

MM/DD/YYYY