هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	**Cloud Architecture**
Course Code:	**IT 476**
Program:	**B.Sc. Information Technology**
Department:	**Information Technology**
College:	**College of Computer and Information Science**
Institution:	**Majmaah University**

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• A. Course Identification

1. Credit hours: 4 (2,2,0)
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☐ Elective ☑
3. Level/year at which this course is offered: Level 10
4. Pre-requisites for this course (if any)**: IT 417- cloud computing foundations**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	55	**100%**
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	44
2	**Laboratory/Studio**	
3	**Tutorial**	11
4	**Others** (specify)	
	Total	55

• B. Course Objectives and Learning Outcomes

1. Course Description

This course 'Cloud Architecting' covers the fundamentals of building IT infrastructure on AWS. The course is designed to teach students solutions for cloud architects and how to optimize their use of the AWS Cloud by understanding AWS services and how they fit into cloud-based solutions. Although architectural solutions can differ depending on the industry, type of application, and size of the business, this course emphasizes best practices for the AWS Cloud that apply to all of them. It also recommends various design patterns to help you think through the process of architecting optimal IT solutions on AWS. Finally, this course provides opportunities for students to build a variety of infrastructures through a guided, hands-on approach.

2. Course Main Objective

students should be able to

1. Make architectural decisions based on cloud architectural principles and best practices
2. Use cloud services to make their infrastructure scalable, reliable, and highly available
3. Use cloud managed services to enable greater flexibility and resiliency in an infrastructure
4. Indicate how to increase the performance efficiency and reduce costs of infrastructures built on AWS
5. Use the cloud Well-Architected Framework to improve architectures that use cloud/AWS solutions.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	CLO1: Make architectural decisions based on cloud architectural principles and best practices	K1
1.2	CLO4: Indicate how to increase the performance efficiency and reduce costs of infrastructures built on AWS	K1
2	**Skills :**	
2.1	CLO2: Use cloud services to make their infrastructure scalable, reliable, and highly available	S1
2.2	CLO3: Use cloud managed services to enable greater flexibility and resiliency in an infrastructure	S1
2.3	CLO5: Use the cloud Well-Architected Framework to improve architectures that use cloud/AWS solutions.	S1
2…		
3	**Values:**	
3.1		
3.2		
3.3		
3…		

- **C. Course Content**

No	List of Topics	Contact Hours
1	**Introducing Cloud Architecting** • What is cloud architecting • Well-Architected Framework • Best practices for building solutions on cloud	4

	• global infrastructure	
2	**Adding a Storage Layer** • The simplest architecture • Storing data in cloud • Moving data to and from cloud Choosing Regions for your architecture	4
3	**Adding a Compute Layer** • Architectural need • Selecting instance type • Pricing options and considerations	8
4	**Adding a Database Layer** • Architectural need • Database layer considerations • Relational Database Database security controls	4
5	**Creating a Networking Environment** • Architectural need • Creating an networking environment • Connecting networking environment to the internet • Securing your cloud networking environment	4
6	**Connecting Networks** • Architectural need • Connecting to your remote network with Site-to-Site VPN • Connecting to your remote network with Direct Connect	8
7	**Securing User and Application Access** • Architectural need • Account users and Identity and Access Management (IAM) • Organizing users • Multiple accounts	4
8	**Implementing Elasticity, High Availability, and Monitoring** • Architectural need • Scaling your compute resources • Scaling your databases	4
9	**Automating Your Architecture** • Architectural need • Reasons to automate • Automating your infrastructure • Automating deployments	4
10	**Caching Content** • Architectural need	4

	• Overview of caching • Edge caching • Caching web sessions • Caching databases	
11	**Planning for Disaster** • Architectural need • Disaster planning strategies • Disaster recovery patterns	3
Total		55

• D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	CLO1: Make architectural decisions based on cloud architectural principles and best practices	Classroom Teaching	Test1, Mid Exam, Final Exam, Assignment , Homework
1.2	CLO4: Indicate how to increase the performance efficiency and reduce costs of infrastructures	Classroom Teaching	Mid Exam, Final Exam, Assignment , Homework
2.0	**Skills**		
2.1	CLO2: Use cloud services to make their infrastructure scalable, reliable, and highly available	Classroom Teaching	Mid Exam, Final Exam, Assignment , Homework
2.2	CLO3: Use cloud managed services to enable greater flexibility and resiliency in an infrastructure	Classroom Teaching	Final Exam, Assignment
2.3	CLO5: Use the cloud Well-Architected Framework to improve architectures that use cloud solutions.	Classroom Teaching	Final Exam, Mini Project,
2.4			
3.0	**Values**		
3.1			
3.2			
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	In-class Tests (written test)	Week 4,	10%
2	Mid Term Exam (written test)	Week 6	20%
3	Mini Project	Week 10	10%
4	Labs , Exercises/Assignment	Every Week	20%

#	Assessment task*	Week Due	Percentage of Total Assessment Score
5	Final Exam (written test)	Week 13	40%
6			
7			
8			

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

• E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :
Each student is assigned to an academic advisor for guidance and counselling

• F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• **Architecting Cloud Computing Solutions: Build cloud strategies that align technology and economics while effectively managing risk", 1st Edition, By Kevin L. Jackson Scott Goessling, 2018.**
Essential References Materials	• **AWS Certified Solutions Architect Study Guide" 2nd Edition, by Ben Piper, David Clinton. Latest version 2021.**
Electronic Materials	• Online **Online Course Notes available on D2L** • **Online reference materials available on SDL**
Other Learning Materials	Online AWS LABs

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Class Room. Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Computer. or Laptop with Windows/Linux.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Projector and Smart Board.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Final Exam Answer Scripts Verification	Peer faculty members	Review
Course Feedback	Students	Survey

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	IT Council
Reference No.	IT Meeting # (1443-1444)
Date	9/02/2022