Course Specification

(Bachelor)

Course Title: Cloud Computing Foundations
Course Code: IT 479
Program: B.Sc. Information Technology
Department: Information Technology
College: College of Computer and Information Sciences
Institution: Majmaah University
Version: V2023
Last Revision Date: 04 November 2023

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3(2,2,0)

2. Course type

A.	☐University	☐College	☒ Department	☒ Track	☐Others
B.	☐Required			☒ Elective	

3. Level/year at which this course is offered: (Level)

4. Course general Description:

This Course prepares students to demonstrate knowledge of Cloud technology concepts from a business and technical perspective, including services, architecture, system integration, connectivity, administration, security, and technical support. This online course explores how to build foundational Cloud computing infrastructure, including websites involving serverless technology and virtual machines

5. Pre-requirements for this course (if any): NIL

6. Co-requisites for this course (if any): NIL

7. Course Main Objective(s):

1. Demonstrate an understanding of Cloud Computing fundamentals
2. Demonstrate an understanding of various Cloud deployment solutions
3. Demonstrate an understanding of the technical aspects of Cloud technologies, costings and impact on the organization
4. Research and describe the roles and workplace skills required to support Cloud transformation
5. Analyze and document how cloud technologies can contribute to business transformation utilizing Industry 4.0 concepts

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		

No	Mode of Instruction	Contact Hours	Percentage
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1				
1.2				
…				
2.0	**Skills**			
2.1	**Analyze and document how cloud technologies can contribute to business transformation utilizing Industry 4.0 concepts**	S2	**Mini Project, Lab Exercises**	**Lab Based Assignments, Mini Project**

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.2	Demonstrate an understanding of Cloud Computing fundamentals	S2	Mini Project, Lab Exercises	Lab Based Assignments, Mini Project
2.3	Demonstrate an understanding of various Cloud deployment solutions	S2	Mini Project, Lab Exercises	Lab Based Assignments, Mini Project
2.4	Demonstrate an understanding of the technical aspects of Cloud technologies, costings and impact on the organization	S4	Mini Project, Graduation Project, Lab Exercises	Case Study Implementation/ Laboratory /Mini project
2.5	Research and describe the roles and workplace skills required to support Cloud transformation	S3	Oral/Written Communication, Seminar	Group Assignments, Mini Project
3.0	Values, autonomy, and responsibility			
3.1				
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Cloud Computing, Cloud Computing at a glance, Vision of Cloud Computing, Defining a cloud, Characteristics, benefits, Challenges.	8
2.	Historical development, Distributed systems, virtualization, Web 2.0, service-oriented computing, utility-oriented computing, building cloud computing environments using AWS cloud	8
3.	Principles of Parallel and Distributed Computing, Era of computing, Elements of parallel computing, Elements of distributed computing	4
4.	Technologies for distributed computing, Remote procedure call, distributed object frameworks, Service-oriented computing	8

5.	Introduction to AWS Management Console, Hosting a static website in AWS, Create, manage and deploy EC2 instance using AWS.	4
6.	Virtualization, Introduction, characteristics, taxonomy of virtualization techniques, Pros and Cons of virtualization, technology examples using AWS cloud, VMWare, Microsoft Hyper-V	8
7.	Cloud Computing Architecture, Introduction, Cloud reference model, types of cloud, Economics of the cloud, Open Challenges, Cloud interoperability and standards, security, trust, privacy, organizational aspects.	8
8.	Industrial platforms and new developments, Amazon web services, Compute Services, Storage Services, Communication Services, Additional services	4
9.	Google AppEngine, Architectural and core concepts, Application life cycle, cost model and observations,	4
10.	Microsoft Azure, Azure Core Concepts, SQL Azure Windows Azure platform appliance, observations	4
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	**Midterm Exam**	**Week 8**	**20%**
2.	**Final Exam**	**Week 16**	**40%**
3.	**Homework, Assignments, quiz, Lab Work**	**Week 2,4,6,8,10,12 ,15**	**40%**
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	• **"Mastering Cloud Computing: Foundations and Applications Programming", 1st Edition by Rajkumar Buyya, Christian Vecchiola, S.Thamarai Selvi. 2013** • **"Cloud Computing For Dummies", Judith S. Hurwitz, Daniel Kirsch, 2nd Edition, John Wiley & Sons Inc, 2020**
Supportive References	
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms, laboratories
Technology equipment (projector, smart board, software)	projector, smart board, software AWS and Azure
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	CLO Survey
Effectiveness of Students assessment	Instructor	Quiz, Mid exam, Assignments, Exercises, Final Exam and Indirect Survey
Quality of learning resources	Convener, instructors, HOD	Regular follow ups
The extent to which CLOs have been achieved	Instructor, TA	Performance in the exam for a particular CLO(s)
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	