2023
TP-153

Course Specification
(Bachelor)

Course Title:	Cloud Computing
Course Code:	CIT 1403
Program:	Bachelor in Information Technology
Department:	Information Technology
College:	Faculty of Computers and Information Technology
Institution:	University of Tabuk
Version:	1.0
Last Revision Date:	27 July 2022

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
3 CHrs. (Three-Credit Hours)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (7/4th Year)					
4. Course general Description:					
This course, designed for undergraduate students, offers a comprehensive introduction to the dynamic world of cloud computing, laying a solid foundation for further studies and real-world applications. As part of this course, students will embark on a journey through the core concepts of cloud computing, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). Through a blend of theoretical instruction and hands-on practice, students will become adept at understanding and navigating cloud environments, which are offered by leading providers such as AWS, Microsoft Azure, and Google Cloud Platform.					
5. Pre-requirements for this course (if any):					
Computer Networks (CIT1202) and Database Systems (CIT1305)					
6. Co-requisites for this course (if any):					
None					
7. Course Main Objective(s):					
▪ **Understand of the fundamental concepts of cloud computing.** ▪ **Familiarize the student with the different deployment models for cloud computing** ▪ **Familiarize the student with the different services models for cloud computing** ▪ **Exploration of cloud service applications in various industries and emerging trends** ▪ **Develop a solid conceptual understanding of the essentials and design issues underlying a wide spectrum of cloud computing** ▪ Understand different CPU, memory and I/O virtualization techniques that serve in offering software, computation and storage services on the cloud					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	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**	45
2.	**Laboratory/Studio**	
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		45

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

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	**Understand the fundamental concepts of cloud computing**	**K1**	**Lectures, textbooks, handouts, references.**	**Exams, quizzes, assignments,**
1.2	**Understand different deployment models for cloud computing**	**K1**	**Lectures, textbooks, handouts, references.**	**Exams, quizzes, assignments,**
1.3	**Understand different service**	**K2**	**Lectures, textbooks, handouts, references.**	**Exams, quizzes, assignments,**

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
	models for cloud computing			
1.4	**Explore different cloud application use cases**	**K4**	**Lectures, textbooks, handouts, references.**	**Exams, quizzes, assignments,**
1.5	**Explain technology of virtualization in cloud computing**	**K2**	**Lectures, textbooks, handouts, references.**	**Exams, quizzes, assignments,**
2.0	**Skills**			
2.1	Design a simple cloud model	**S1,s2,s4**	**Lectures, textbooks, handouts, references.**	**Exams, quizzes, assignments,**
2.2	Create virtual cloud images	**S3**	**Lectures, textbooks, handouts, references.**	**Exams, quizzes, assignments,**
3.0	**Values, autonomy, and responsibility**			
3.1	The ability to demonstrate work within a team	**V2**	**Lectures, textbooks, handouts, references.**	**Exams, quizzes, assignments,**

C. Course Content

No	List of Topics	Contact Hours
1.	**Introduction to Cloud computing and transition from legacy IT to cloud based IT (Part 1):** Definition of Cloud Computing, Historical Perspective of IT Infrastructure, Benefits of Cloud Computing, Challenges in Transitioning to Cloud.	**3**
2.	**Introduction to Cloud computing and transition from legacy IT to cloud based IT (Part 2):** Strategies for IT Transition to Cloud, Managing Organizational Change,Data Migration to the Cloud	**3**

3.	**enabling technologies in cloud computing:** Internet and Networking Fundamentals, Data Center Technology, Virtualization Technologies ,Web Services and APIs	**3**
4.	**Cloud architecture and cloud building blocks and differentiate cloud service models (Part 1):** Infrastructure as a Service (IaaS),Platform as a Service (PaaS),Software as a Service (SaaS),Public, Private, and Hybrid Cloud Models	**3**
5.	**Cloud architecture and cloud building blocks and differentiate cloud service models (Part 2):** Serverless Computing,Function as a Service (FaaS) Comparison of Service Models	**3**
6.	**cloud software stack:** Overview of Cloud Software Stack Layers,Cloud Operating Systems,Middleware in Cloud Computing	**3**
7	**Virtualization for cloud computing (Part 1):** Virtualization Fundamentals, Hypervisors and Virtual Machines, Virtualization Benefits and Challenges.	**3**
8	**Virtualization for cloud computing (Part 2):** Virtualization Management, Virtual Clusters, Resource Management	**3**
9	**Cloud storage:** Data Redundancy and Replication, Storage Security, Cloud Storage Technologies	**3**
10	**Cloud computing and networking services (SDN,NFV) part 1:** Network Function Virtualization (NFV) Introduction, SDN/NFV Architecture, Cloud Networking Benefits	**3**
11	**Cloud computing and networking services (SDN,NFV) part 2:** Cloud Network Resource Management, SDN/NFV Security	**3**
12	**Cloud security and cybersecurity (Part 1):** Cloud Security Fundamentals, Cloud Threat Models, Identity and Access Management	**3**
13	**Cloud security and cybersecurity (Part 2):** Cloud Compliance and Regulations, Security Best Practices, Disaster Recovery, Security Monitoring	**3**
14	**Cost metric models in cloud computing:** Cloud Cost Structure Understanding, Cloud Provider Pricing Models	**3**
15	**Service quality model and SLA:** Service Level Agreements (SLAs) Definition, Quality of Service (QoS) Metrics, SLA Monitoring and Management	**3**
Total		**45**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Four Assignments	**3,6,9,11**	**10%**
2.	**Mid term 1**	**6-7**	**20%**
3.	**Mid term 2**	**11-12**	**20%**
4.	**Class work and activities**	**1~15**	**10%**
5.	**Final**	**16**	**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	Cloud Computing Concepts, Technology, Security, and Architecture, Pearson; 2 edition (22 July 2023). ISBN-10 ‏ : ‏ 0138052255 ISBN-13 ‏ : ‏ 978-0138052256
Supportive References	***Cloud Computing Theory and Practice***
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	**Classroom**
Technology equipment (projector, smart board, software)	**Data show**
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of Teaching	Faculty, Program Leaders, and Advisory Board	Both Direct and Indirect
	Students	Indirect
Effectiveness of Students Assessment	Faculty, Program Leaders, Advisory Board, and Independent Opinion	Both Direct and Indirect
Quality of Learning Resources	Faculty, Students, and Advisory Board	Indirect
The Extent to which CLOs have been Achieved	Faculty, Program Leaders, Advisory Board, and Independent Opinion	Direct (as in section B) and Indirect/Surveys
	Students	Indirect
Other	-	-

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	

REFERENCE NO.	
DATE	