Course Specifications

Course Title:	Cloud Computing
Course Code:	CSI 533
Program:	Computer Sciences &Information Technology
Department:	Computer Science and Information
College:	Science at Al-Zulfi
Institution:	Majmaah

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A. Course Identification

1. Credit hours: 3	

2. Course type
a. University ☐ College ☐ Department ■ Others ☐
b. Required ☐ Elective ■

3. Level/year at which this course is offered: Level 8

4. Pre-requisites for this course (if any)**: CSI 321; CSI 322:** Design & analysis of algorithms; Computer networks

5. Co-requisites for this course (if any)**: Nil**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	44	80 %
2	Blended	3	5 %
3	E-learning	3	5 %
4	Correspondence	3	5 %
5	Other	3	5 %

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	10
3	Tutorial	15
4	Others (specify)	5
	Total	**60**
Other Learning Hours*		
1	Study	10
2	Assignments	20
3	Library	10
4	Projects/Research Essays/Theses	20
5	Others (specify)	0
	Total	**60**

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

Cloud computing is changing the way businesses and users interact with computers and mobile devices. Gone are the days of expensive data centers, racks of disk drives, and large IT support teams. In their place are software applications delivered to users on demand from the cloud, high-capacity, auto-replicated, secure cloud-based disk-storage and databases, virtualized-server and desktop environments, and cloud-based collaboration tools which support on-premise-, remote-, and hybrid-team success. Within the pages of Cloud Computing, readers will find a hands-on introduction to the cloud, which will have them using cloud-based data storage to store personal documents and to share photos and other digital media with other users and their own various devices, performing cloud-based automated backups, and using other cloud-based applications by the end of Chapter 1! Readers will learn specifics about software as a service (Saas), platform as a service (Paas), infrastructure as a service (IaaS), server and desktop virtualization, and much more. Each chapter of the book presents a cloud topic, examines the underlying business case, and then takes the reader on a test drive. The chapters are filled with real-world case studies. The book's content is ideal for users wanting to migrate to the cloud, IT professionals seeking knowledge on cloud fundamentals, developers who will build the cloud solutions of the future, and CIOs wanting insights on the most recent cloud solutions.

2. Course Main Objective

The goal of this course is to introduce the students to the principles, foundations, and applications of cloud computing, and the way it presents significant technology trends to reshape information technology processes and the IT marketplace. In this course the different types of features, standards, services, and security issues in cloud computing will be discussed. This course offers students the opportunity to study this new paradigm of computing in which dynamically scalable and often virtualized resources are offered as services over the internet. The course will also cover some of the autonomic computing aspects which provide solutions to the challenges of cloud management.

Students will have the opportunity to study both theoretical and experimental aspects of the cloud computing. The class requires engagement in active participation through presentations and many discussions. A variety of reading material will be given throughout the semester. Students inclined to both theoretical and/or experimental work are expected to bring their active contribution to this class.

3. Course Learning Outcomes

Upon successful completion, students will have the knowledge and skills to:

	CLOs	Aligned-PLOs
1	**Knowledge:**	
1.1	Demonstrate the knowledge of architecture, service models, economics, scaling and recovering of cloud computing.	K3
1.2	Understand the core concepts of the cloud computing paradigm: how and why this paradigm shift came about and the influence of several enabling technologies in cloud computing.	K2
1.3	Understand the technology infrastructure and network requirements for cloud computing.	K2
2	**Skills :**	
2.1	Choose the appropriate technologies, algorithms, and approaches for the related issues.	S4
2.2	Identify problems, analyze, and evaluate various cloud computing solutions.	
2.3	Use the appropriate cloud computing solutions and recommendations according to the applications used.	
3	**Competence: الكفاءات**	
3.1	Learn how to search for information through library and internet.	C1
3.2	Present a short report in a written form and orally using appropriate scientific language.	
3.3	Function effectively on teams to accomplish a common goal, and communicate effectively with a range of audiences**.**	
3.4	Present and discuss case studies in relate to cloud services and models	

C. Course Content

No	List of Topics	Contact Hours
1	Overview of Distributed Computing: Trends of computing, Introduction to distributed computing	4
2	Introduction to Cloud Computing: What's cloud computing, Properties & Characteristics, Service models, Deployment models.	8
3	Infrastructure as a Service (IaaS): Introduction to IaaS, Resource Virtualization, Server, Storage, Network, Case studies.	12
4	Platform as a Service (PaaS): Introduction to PaaS Cloud platform & Management, Computation, Storage, Case studies	8
5	Software as a Service (SaaS): Introduction to SaaS, Web services Web 2.0, Web OS, Case studies.	12
6	Cloud issues and challenges: Cloud provider Lock-in, Security.	8
7	Overview of Map Reduce: What is Map Reduce, What is Map Reduce used for, implementation detail ,implication for the parallel development.	8
Total		60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods Live Learning: Lecture, PowerPoint slides and discussion

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	Demonstrate the knowledge of architecture, service models, economics, scaling and recovering of cloud computing.	▪ **Direct Teaching:** Lectures, PowerPoint slides and discussion. ▪ **Aimed Teaching** Discovery and Oral Questions.	- Homework tasks - Quiz - Midterms - Final Exam
1.2	Understand the core concepts of the cloud computing paradigm: how and why this paradigm shift came about and the influence of several enabling technologies in cloud computing.		
1.3	Understand the technology infrastructure and network requirements for cloud computing.		- E-learning - Internet search - Oral Exam
2.0	**Skills**		
2.1	Choose the appropriate technologies, algorithms, and approaches for the related issues.	**Indirect Teaching:** Brainstorming - Free Discovery – Inquiry	- HW Exercises - Lab Exam - Oral Exam - Presentations
2.2	Identify problems, analyze, and evaluate various cloud computing solutions.		
2.3	Use the appropriate cloud computing solutions and recommendations according to the applications used.		
3.0	**Competence**		
3.1	Learn how to search for information through library and internet.	**Course Project: (Work group)** critical thinking and ability to seek solutions.	Introduce group project and case study approaches to enable students to have an experience in problem solving situations.
3.2	Present a short report in a written form and orally using appropriate scientific language.		
3.3	Function effectively on teams to accomplish a common goal, and communicate effectively with a range of audiences.		
3.4	Present and discuss case studies in relate to cloud services and models		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First written mid-term exam	6	20%
2	Second written mid-term exam	12	20%
3	Class activities, group discussions, Presentation	Every 2 weeks	5%
4	Homework + Assignments	After every Chapter	5%
5	Electronic exam	14	5%
6	Lab activities	15	5%
12	Final Exam	16	40%

*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:
- Determine meeting appointments for the weak' students to solve their problems and give them academic advices.
- One office hour daily
- Dealing a workshops.
- Motivate students

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	**Cloud Computing: SaaS, PaaS, IaaS, Virtualization, Business Models, Mobile, Security and More 1st Edition (Kris Jamsa, 2013)**
Essential References Materials	Cloud Computing: A Hands-On Approach (Arshdeep Bahga and Vijay K. Madisetti, 2014)
Electronic Materials	**httphttps://cloudacademy.com/library/?q=cloud%20computing**
Other Learning Materials	**Course material includes handouts, ppt, questionnaires as distributed among the students**

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom – Laboratory + Blackboard System
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show – Smart Board + Blackboard System
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
1. Questionnaires (course evaluation) filled by the students and acquired electronically by the University	Students	Indirect Assessment
2. Students-faculty management meetings		
3. Departmental internal review of the	Department Council	Questionnaires

Evaluation Areas/Issues	Evaluators	Evaluation Methods
course.		
4. Discussion with the industrial partners to enhance the courses in order to meet their needs.	Stockholders	Meetings
5. Midterms and Final Exam	Course Coordinator Staff	Direct Assessment
6. Project Evaluation		

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	
Reference No.	
Date	