Course Description Form

1. Course Name:
Cloud Computing Security
2. Course Code:
CSCS4116
3. Semester / Year:
First course (2024-2025)
4. Description Preparation Date: September 2024
September 2024
5. Available Attendance Forms:
In classroom weekly attendance
6. Number of Credit Hours (Total) / Number of Units (Total):- 30 - 2 Units
30 hours - 2 Units
7. Course administrator's name (mention all, if more than one name)
Name: Prof.Dr. Ekhlas Khalaf Email: ekhlas.k.gbashi@uotechnology.edu.iq
8. Course Objectives

Course Objectives	This course aims to introduce the main concepts of cloud computing, risks, interoperability, standards and security. Basic topics on distributed computing, grid computing and virtualization will be presented first, followed by the concept of cloud computing, functional and operational architecture, cloud deployment models, public and private environments, as well as leveraging services: IaaS, PaaS and SaaS. Study cloud vulnerabilities, attacking enterprise data in the cloud, and cloud-specific security indicators. Methods and tools used to protect cloud computing systems are also presented.
9. Teaching and Learning Strategies	
Strategy	A- **Knowledge and Understanding** A1- Enabling the student to know and understand the theoretical principles of cloud computing security

	A2- The student should understand the architecture of cloud computing and its layers so that he can protect it A3- Enabling the student to learn how to design an advanced security system for cloud computing. **B-Subject-specific skills** B1 - logical thinking B2 - Giving the student tasks to design and solve security problems for cloud computing layers to motivate him to acquire skills to solve programming problems • Methodological books, resources (internet and library), dialogues reinforced with illustrative examples,Theoretical lectures, laboratory laboratories, practical tasks, using modern devices to present practical ideas to students (data show, electronic board) **Assessment Methods** Daily exams, quarterly exams, practical exams, attendance and active participation in the lecture **C.Thinking Skills** c1 - ability to work together and lead group c2-ability to solve problems and think collectively **D-General and Transferable Skills (other skills relevant to employability and personal development)** D1- Using theoretical and practical tools in analyzing cloud computing D2 - Using modern means of communication to interact with the work team to solve a specific problem D3- The ability to manage time while working as a team D4- Documenting the stages of building cloud computing of all kinds to be able to examine and correct errors in the system.

10. Course Structure	
11.	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical	1,4,5,6,7	-Introduction -Cloud Computing Definition - layers of cloud -types of cloud services	lectures + Video	Attendance + answer discussion questions
2	2 Theoretical	1,4,5,6,7	-Saas -Paas -IaaS	lectures + Video	Attendance + answer discussion questions
3	2 Theoretical	1,4,5,6,7	Virtualization	lectures + Video	Attendance + answer discussion questions
4	2 Theoretical	1,4,5,6,7	- Cloud computing deployment models - Enabling technologies	lectures + Video	Attendance + answer discussion questions
5	2 Theoretical	1,4,5,6,7	- Cloud computing Benefits	lectures + Video	

			- Limitations of cloud		
6	2 Theoretical	1,4,5,6,7	-Cloud computing features - challenges and risks of cloud compting	lectures + Video	Attendance + answer discussion questions
7	2 Theoretical	1,4,5,6,7	- Virtualization - objectives to virtualization	lectures + Video	Attendance + answer discussion questions
8	2 Theoretical	1,4,5,6,7	- Types of virtualization Server, (Hardware,network,storage,application server,application,data,desktop,Nested,Desktop) virtualization	lectures + Video	Attendance + answer discussion questions
9	2 Theoretical	1,4,5,6,7	-Aspects of data security -Data security mitigation -Provider security and its security (storage,confidentiality,Integrity,Availability)	lectures + Video	
10	2 Theoretical	1,4,5,6,7	Security management standards Security management in cloud	lectures + Video	Attendance + answer discussion questions
11	2 Theoretical	1,4,5,6,7	-Availability management -Factors impacting availability	lectures + Video	Attendance + answer

			-Saas Availability management -PaaS Availability management -IaaS availability management		discussion questions
12	2 Theoretical	1,4,5,6,7	-Access Control in cloud -Access control :SaaS -Access control:PaaS -Access Control:IaaS	lectures + Video	
13	2 Theoretical	1,4,5,6,7	-Security Vulnerability, Patch, and -Configuration Management -Security Vulnerability Management -Security Patch Management -Security Configuration Management	lectures + Video	Attendance + answer discussion questions
14	2 Theoretical	1,4,5,6,7	- What Is Privacy? -What Is the Data Life Cycle? -What Are the Key Privacy Concerns in the Cloud?	lectures + Video	Attendance + answer discussion questions
15	2 Theoretical	1,4,5,6,7	-Who Is Responsible for Protecting Privacy? -Changes to Privacy Risk Management and Compliance in Relation to Cloud Computing -Importance of multi-tenancy - Types of multi-tenant architecture - Secure Separation / Isolation Strategies - Network Separation - Compute Separation - Storage Separation - Application Tier Separation	lectures + Vi lectures + Video deo	Attendance + answer discussion questions

12. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
13. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Not required
Main references (sources)	1.Mather, S.Kumaraswamy, and S. Latif, "Cloud Security and Privacy",1st edition,Copyright © 2009 ,Published by O'Reilly Media, Inc., USA. 2.Securing The Cloud: Cloud Computing Security Techniques and Tactics by Vic (J.R.) Winkler (Syngress/Elsevier),2011.
Recommended books and references (scientific journals, reports…)	3.Vimal Kumar, Sivadon Chaisiri and Ryan Ko," Data Security in Cloud Computing",1st edition, Copyright © The Institution of Engineering and Technology, London,UK,2017.
Electronic References, Websites	