MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Foundations of Cloud Computing**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **lab**	
Module Code	**IT4105**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGIIII		**Semester of Delivery**	1	
Administering Department	Information Technology		**College**	College of Computer Science and Information Technology	
Module Leader	Ali Adnan Ahmad		**e-mail**	aliadnan@uowa.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	**PhD**	
Module Tutor	Ali Adnan Ahmad		**e-mail**	aliadnan@uowa.edu.iq	
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Scientific Committee Approval Date	01/09/2026		**Version Number**	V1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	IT372, IT332	**Semester**	6,6
Co-requisites module	-	**Semester**	-

Department Head Approval **Dean of the College Approval**

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Understanding Cloud Computing: Equip students with a comprehensive understanding of cloud computing concepts, models, and architectures. 2. Practical Skills: Develop practical skills in managing cloud environments, including infrastructure, data, and virtualization. 3. Security: Enhance understanding of cloud security measures and their importance in protecting data and applications. 4. Application Development: Teach students how to develop cloud-native applications and use cloud APIs.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand Cloud Computing: Explain the key concepts, models, and architectures of cloud computing. 2. Manage Cloud Environments: Set up and manage a cloud environment, including infrastructure, data, and virtualization. 3. Implement Security Measures: Apply appropriate security measures to protect data and applications in the cloud. 4. Develop Cloud Applications: Develop cloud-native applications and use cloud APIs effectively. 5. Optimize Cloud Services: Scale cloud services and optimize their performance to meet user and application demands.
Indicative Contents المحتويات الإرشادية	1. Introduction to Cloud Computing: Overview of cloud computing, its importance, and its impact on the IT industry. 2. Cloud Service Models: Detailed exploration of different cloud service models - IaaS, PaaS, SaaS, and their use cases. 3. Cloud Computing Architecture: In-depth study of the architecture of cloud computing systems. 4. Cloud Infrastructure and Data: Understanding the infrastructure that supports cloud services, including data centers and networks. 5. Virtualization in Cloud Computing: Role of virtualization in cloud computing, including virtual machines and containers. 6. Cloud Storage and Databases: How data is stored and managed in the cloud, including cloud databases and storage services. 7. Cloud Security: Security considerations in cloud computing, including data privacy and compliance.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lectures: Core concepts and principles will be taught through lectures, providing students with a foundational understanding of the subject matter.

	2. Hands-On Labs: Practical skills will be developed through lab sessions, where students can apply theoretical knowledge in a practical context. 3. Group Projects: Students will work on group projects to foster teamwork and collaboration skills. This also allows for the application of knowledge in a practical, real-world context. 4. Independent Study: Students will be encouraged to engage in independent study to deepen their understanding of the topics covered. This could involve reading recommended texts, researching online resources, or practicing skills. 5. Discussions and Seminars: Regular discussions and seminars will be held to foster a deeper understanding of the material, encourage critical thinking, and facilitate the exchange of ideas. 6. Assessments: Regular assessments will be conducted to gauge students' understanding of the material, provide feedback, and track progress. 7. Guest Lectures: Guest lectures from industry professionals or academics could be arranged to provide different perspectives and insights into the subject matter. 8. Online Learning Resources: Students will be encouraged to utilize online resources, such as video tutorials, online courses, and forums, to supplement their learning.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدرا يس المنتظم للطالب خلال الفصل	65	**Structured SWL (h/w)** الحمل الدرا يس المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدرا يس غ ري المنتظم للطالب خلال الفصل	85	**Unstructured SWL (h/w)** الحمل الدرا يس غ ري المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدرا يس الك يل للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	5	2 (10%)	2,4,6,8,10	1,2,3,4
	Home Work	5	2 (10%)	3,5,7,9,11	all
	Projects	1	5 (5%)	12	all
	Lab	5	3 (15%)	all	all
Summative assessment	**Midterm Exam**	2hr	20% (10)	7	
	Final Exam	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction to Cloud Computing**: Overview of cloud computing, its importance, and its impact on the IT industry.
Week 2	**Cloud Service Models**: Understanding different cloud service models - IaaS, PaaS, SaaS, and their use cases.
Week 3	**Cloud Computing Architecture**: Deep dive into the architecture of cloud computing systems.
Week 4	**Cloud Infrastructure and Data**: Understanding the infrastructure that supports cloud services, including data centers and networks.
Week 5	**Virtualization in Cloud Computing**: Exploring the role of virtualization in cloud computing, including virtual machines and containers.
Week 6	**Cloud Storage and Databases**: Understanding how data is stored and managed in the cloud, including cloud databases and storage services.
Week 7	**Cloud Security**: Exploring security considerations in cloud computing, including data privacy and compliance.
Week 8	**Midterm Exam Review**
Week 9	**Cloud Application Development**: Introduction to developing applications for the cloud.
Week 10	**Cloud APIs and Services**: Understanding how to interact with cloud services using APIs.
Week 11	**Scalability and Performance in the Cloud**: Exploring how cloud services can be scaled to handle increased demand, and how to optimize performance.
Week 12	**Cloud Cost Management and Pricing**: Understanding the cost structure of cloud services and how to manage cloud expenses.
Week 13	**Open Source Software in Cloud Computing**: Exploring the role of open-source software in cloud computing.
Week 14	**Emerging Trends in Cloud Computing**: Discussing emerging trends and technologies in cloud computing, such as serverless computing and edge computing.
Week 15	**Final Exam Review**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Setting up a Cloud Environment**: Students will set up their own cloud computing environment using a platform like AWS, Google Cloud, or Microsoft Azure.
Week 2	**Exploring Cloud Service Models**: Students will explore different cloud service models (IaaS, PaaS, SaaS) by deploying a simple application on each model.
Week 3	**Building a Cloud Architecture**: Students will design and implement a basic cloud architecture for a hypothetical application.
Week 4	**Working with Cloud Infrastructure and Data**: Students will learn how to manage cloud infrastructure and handle data storage and retrieval.
Week 5	**Implementing Virtualization**: Students will create and manage virtual machines and containers in the cloud.
Week 6	**Cloud Storage and Databases**: Students will work with cloud storage services and databases, learning how to store and retrieve data.
Week 7	**Implementing Cloud Security Measures**: Students will learn about and implement basic cloud security measures, such as encryption and access control.
Week 8	**Midterm Project**: Students will apply what they've learned so far to a midterm project, which could involve building and deploying a cloud-based application.
Week 9	**Cloud Application Development**: Students will develop a cloud-native application, learning about the tools and techniques used in cloud development.
Week 10	**Working with Cloud APIs and Services**: Students will learn how to use cloud APIs to interact with cloud services.
Week 11	**Scalability and Performance in the Cloud**: Students will learn how to scale cloud services and optimize performance.
Week 12	**Cloud Cost Management and Pricing**: Students will learn about the cost structure of cloud services and how to manage cloud expenses.
Week 13	**Open Source Software in Cloud Computing**: Students will explore the role of open-source software in cloud computing.
Week 14	**Emerging Trends in Cloud Computing**: Students will learn about emerging trends in cloud computing, such as serverless computing and edge computing.
Week 15	**Final Project**: Students will apply everything they've learned to a final project, which could involve building a complex cloud-based application.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	"Cloud Computing: Concepts, Technology & Architecture" by Thomas Erl, Ricardo Puttini, and Zaigham Mahmood.	No
Recommended Texts		No
Websites	AWS documintation	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.