



Future Academy
Higher Future Institute for Specialized Technological Studies

Course Specification

1- Course information:

Course Code:	CSS433
Course Title:	Cloud Computing
Year/level	4 th
Academic Programs	Computer Science Program (B.Sc.)
Contact hours/ week	(Theoretical=2hrs, Practical=2hrs), Total= 4hrs

2- Course aims:

This course provides a hands-on comprehensive study of Cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Business Process as a Service (BPaaS). Mainstream Cloud infrastructure services and related vendor solutions are also covered in detail. PaaS topics cover a broad range of Cloud vendor platforms including AWS, Google App Engine, Microsoft Azure, Eucalyptus, OpenStack and others as well as a detailed study of related platform services such as storage services that leverage Google Storage, Amazon S3, Amazon Dynamo, or other services meant to provide Cloud resources management and monitoring capabilities. The SaaS and PaaS topics covered in the course will familiarize students with the use of vendor-maintained applications and processes available on the Cloud on a metered on-demand basis in multi-tenant environments.

3- Intended learning outcomes of the course (ILOs):

a- Knowledge and understanding:

On successful completion of this course, the student should be able to:

- a1- 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.
- a2- Demonstrate the knowledge of architecture, service models, economics, scaling and recovering of cloud computing.
- a3- Understand the technology infrastructure and network requirements for cloud computing.
- a4- Recognize the legal, ethical, and managerial requirements of cloud computing.

b- Intellectual skills:

On completing this course, the student should be able to:

- b1- Use Cloud Services applications and platforms.
- b2-Build Private Cloud schema.
- b3- Implement Virtualization software.
- b4- Analyze cloud analytics concepts and tools.
- b5-

c- Professional and practical skills:

At the end of this course, the student will be able to:

- c1- Apply Web services based cloud computing.
- c2- Apply Google application cloud.
- c3- Develop emerging cloud technologies and future trends.
- c4- Classify the types of cloud services and their advantages and disadvantages.
- c5- Evaluate potential cloud security risks and threats.

d- General and transferable skills:

On successful completion of this course, the student should be able to:

- d1- Manage critical thinking and ability to seek solutions.
- d2- Interact in groups collaboratively.
- d3- Have an experience in problem solving situations.
- d4-
- d5-

4- Course contents

Topics/units	Number of hours		ILO's
	Lecture hours	Practical hours	
Overview of Distributed Computing: Trends of computing, Introduction to distributed computing.			a1,b3,c4
Introduction to Cloud Computing : What's cloud computing, Properties & Characteristics , Service models , Deployment models.			
Infrastructure as a Service (IaaS) :Introduction to IaaS ,Resource Virtualization, Server ,Storage ,Network, Case studies.			
Platform as a Service (PaaS) : Introduction to PaaS, Cloud platform & Management ,Computation ,Storage, Case studies.			
Software as a Service (SaaS) : Introduction to SaaS, Web services Web 2.0, Web OS ,Case studies.			

Cloud issues and challenges :Cloud provider Lock-in ,Security.			
Overview of Map Reduce: What is Map Reduce, What is Map Reduce used for, implementation detail ,implication for the parallel development.			
Introduction to Hadoop :Typical Hadoop Cluster , Challenges , Hadoop Components, example			
Hadoop Distributed File System :Big data and hand hop introduction, Hdfs introduction, Hdfs definition, Hdfs architecture, understanding the file system, Read and write in Hdfs, Hdfs cl.			

5- Teaching and learning methods

Methods	ILO's																			
	a1	a2	a3	a4	a5	b1	b2	b3	b4	b5	c1	c2	c3	c4	c5	d1	d2	d3	d4	d5
Lectures																				
Training visits																				
Practical sections																				
Self-learning																				
Summer training																				
Assays and reviews																				
Discussion groups																				

6- Teaching and learning methods for Low-achieving students

- Extra teaching hours for those who need help
- More quizzes to assess their ability for understanding the course
- Encourage the team work for those students with other advanced ones to increase their participation and understanding

7- Student assessment

Assessment method	Time	Grade weight (%)	ILOs
Written exam			

Practical exam			
Oral exam			
Mid-term exam			
Others			

8-List of references

8.1. Student notebooks:

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8.2. Essential textbooks:

- Cloud Computing: Concepts, Technology & Architecture (The Prentice Hall Service Technology Series).
- Business in the Cloud: What Every Business Needs to Know About Cloud Computing Michael H. Hugos, Derek Hultzky, ISBN: 978-0-470-61623-9.

8.3. Recommended textbooks:

- Cloud Computing Explained: Implementation Handbook for Enterprises, 2nd edition by John Rhoton (2013), Recursive Press, ISBN 0956355609

8.4. Journals, Periodical and Reportsetc.

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8.5. Websites

- <https://cloud.google.com/?hl=en>
- <https://aws.amazon.com/ar/free/>
- <https://www.ibm.com/consulting/cloud>

Course Coordinator:

Head of department: *Prof. Dr. Yasser F. Ramadan*

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