The University of Jordan
King Abdullah II School for Information Technology
Business Information Technology Department (BIT)
Cloud Computing (1904720)
2nd Semester, 2015/2016

Pre-requisite(s): None **Course Web Site:** https://elearning.ju.edu.jo

Course Coordinator: Dr. Rizik Al-Sayyed

Course Description:

This course will introduce students to the state-of-the-art in Cloud Computing technologies and applications. The course focuses on cloud computing services, types, models, security issues, Quality of Service(QoS), Service-Level Agreements (SLA) , Virtual Machines, performance monitoring, pricing, risk management, scientific computing, tools for building different types of clouds, legal issues in cloud computing, business computing on clouds, and novel applications of cloud computing. The course aims also to identify potential research directions and technologies that will facilitate creation a global market-place of cloud computing services supporting scientific, industrial, business and consumer applications

Intended Learning Outcomes (ILO):

On successfully completing the module, the students are expected to have gained good knowledge of:

No.	Course Intended Learning Outcomes (CILOs)
	Knowledge
A	Describe and discuss the fundamental concepts and models of cloud computing
B	Identify and explain the major cloud-enabling technologies, including networking, storage, different virtualization techniques, and data center
C	Explain the cloud computing platform components for processing, mechanisms, including infrastructure mechanisms, management mechanisms, and security mechanisms
D	Explain and describe the concept and workflow of service-oriented architectures
E	Identify and explain different cloud computing architectures
	Professional Skill
F	Manage cloud computing systems
G	Design and implement cloud computing systems
H	Use cloud programming (e.g., Google App Engine, Amazon Web Services) to solve real problems

Teaching and Learning Methodology:

Method	Lecture	Demo	Laboratory	Case study
Learning outcomes	A+B+C+D	D+E	G+H	F+H
Assessment	Exams + Assignment + Presentation + Research Paper			

Textbook and Materials:

Cloud Computing: Theory and Practice, Author: Dan C. Marinescu. Elsevier – Morgan Kaufmann, (2013) ISBN: 978-0-12404-627-6.

Course Objectives

On completion of this course, students should be able to:

- Have a good understanding of cloud computing fundamentals, services, and types.
- Have a good understanding of Service Level Agreements in cloud computing.
- Know the Quality of Service parameters.
- Know how to build a cloud.
- Know how to measure and monitor the QoS.
- Deploy an application in the cloud environment.
- Know the main factors which affect the cloud application performance.
- Know the main challenges and concerns in the cloud computing environment.

Attendance and Responsibilities:

Students are responsible for class attendance and for all material covered in class. It is the students' responsibility to turn in their homework assignments to their instructors **by** the announced due date/time.

Class Participation:

Class participation will account for a small percentage of the grade; participation requires reading ahead the assigned material before each class session and being engaged in class discussions, and actively participating in group activities.

Tentative Schedule: *(The coverage order is subject to change as the instructor sees fit)*

Week/Date	Topics	PPT
1 & 2	CHAPTER 1 Introduction	**Chapter1**
3 & 4	CHAPTER 2 Parallel and Distributed Systems	**Chapter2**
5	Azure Presentation	**MS Handout**
6 & 7	CHAPTER 3 Cloud Infrastructure	**Chapter3**
8	CHAPTER 4 Cloud Computing: Applications and Paradigms	**Chapter4**
9 & 10	CHAPTER 5 Cloud Resource Virtualization	**Chapter5**
11 & 12	CHAPTER 6 Cloud Resource Management and Scheduling Application/Guest Presentation	**Chapter6** **External Material**
13	CHAPTER 7 Networking Support	**Chapter7**
14	CHAPTER 8 Storage Systems	**Chapter8**
15	CHAPTER 9 Cloud Security	**Chapter9**

Extra Material (Papers) will be assigned in due course.

Grading and Evaluation Criteria: 100 points distributed as follows:

Weight	Criteria	Comments
30%	Midterm Exam (Written)	TBA (in due course)
20%	Assignment/Presentations	At least two
10%	Project/Term Paper	At least one
40%	Final Exam (Written)	TBA (in due course)

Intended (Tentative) Grading Scale:

Range	LG	الحرف	Range	LG	الحرف	Range	LG	الحرف
90 - 100	A	أ	74 - 77	B-	ب-	56 - 60	D+	د+
86 - 89	A-	أ-	70 - 73	C+	ج+	50 - 55	D	د
82 - 85	B+	ب+	66 - 69	C	ج	45 - 49	D-	د-
78 - 81	B	ب	61 - 65	C-	ج-	0 - 44	F	هـ

Additional Reading

- Mastering Cloud Computing: Foundations and Applications Programming. Rajkumar Buyya, Christian Vecchiola and S. Thamarai
- Selvi. Elsevier – Morgan Kaufmann, (2013) ISBN: 978-0-12-411454-8
- Cloud Computing: Principles ad Paradigms, Authors: Rajkumar Buyya, James Broberg, and Andrzej M. Goscinski. Wiley Press, New York, USA (March 2011) ISBN: 978-0-470-88799-8.
- The Basics of Cloud Computing, Understanding the Fundamentals of Cloud Computing in Theory and Practice. 1st Edition. Derrick Rountree , Ileana Castrillo, Elsevier – Morgan Kaufmann, (2013) ISBN: 978-0124059320
- Cloud Computing: Concepts, Technology & Architecture by Thomas ErlPublished May 2013.
- Architecting the Cloud: Design Decisions for Cloud Computing Service Models (SaaS, PaaS, & IaaS) by Michael J. Kavis Published January 2014.
- Cloud Computing Protected: Security Assessment Handbook by John Rhoton Published January 2013
- Building the Infrastructure for Cloud Security by Raghuram Yeluri Published March 2014
- Selected research papers will be addressed to students during the classes
- Selected websites on cloud computing will be addressed during the classes.

Regulations:

1. Every student is expected to completely adhere to the exams dates and projects strict deadlines, absolutely no exceptions will be given.
2. Maximum allowable absence 15% of number of Lectures/Semester

- الامتناع المدبر عن حضور المحاضرات أو الدروس أو عن الأعمال الاخرى التي تقضي الأنظمة بالمواظبة عليها ، وكل تحريض على هذا الامتناع سوف يؤدي الى حرمان الطالب من المادة المعنية.
- في حالة التغيب عن امتحان ال Mid Term لن يكون هناك امتحان تعويضي الا في حالة وجود عذر وحالة طارئة من المستشفى. على الطالب ابراز العذر لمدرس المادة في فتره لا تتجاوز الثلاثة ايام من تاريخ الامتحان, وللمدرس الحق في قبول او رفض العذر , وحسب التعليمات.

- **Concerns or complaints should be expressed in the first instance to the module lecturer; if no resolution is forthcoming then the issue should be brought to the attention of the module coordinator (for multiple sections) who will take the concerns to the module representative meeting. Thereafter problems are dealt with by the Department Chair and if still unresolved the Dean and then ultimately the Vice President. For the final complaints, there will be a committee to review grading the final exam.**
- **For more details on University regulations please visit http://www.ju.edu.jo/rules/index.htm**