School of Computing and Information Sciences

Course Title: Introduction to Cloud Computing **Date:** 9/30/19

Course Number: CEN-4083

Number of Credits: 3

Subject Area: Computer Systems	**Subject Area Coordinator:** Jason Liu **email:** liux@cs.fiu.edu
Catalog Description: Topics include the concepts and principles of cloud computing and the techniques of using cloud systems and developing cloud applications.	
Textbook: None.	
References:	
Prerequisites Courses: (CNT-4713 and (CDA-3102 or CDA-4101)) or permission of the instructor	
Corequisites Courses:	

Type: CS Elective

Prerequisites Topics:

- Knowledge of computer organization and computer networks
- Experience in network programming

Course Outcomes:

1. Master the concepts and principles of cloud computing
2. Be familiar with the concepts and principles of virtualization
3. Master the techniques of using Infrastructure-as-a-Service, Platform-as-a-Service and big data systems
4. Master the techniques of developing, deploying, and managing cloud applications

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Outline

Topic	Lecture Hours	Outcome

• Introduction
  • Background and history of cloud computing
  • Cloud computing models
	3	1

• Virtualization
  • Background and history of virtualization
  • Virtual machines, virtual networks, virtual storage
	3	2

• Infrastructure as a Service (IaaS)
  • IaaS system architecture
  • IaaS programming
	10	3,4

• Platform as a Service (PaaS)
  • PaaS system architecture
  • PaaS programming
	10	3,4

• Big data
  • Big data system architecture
  • Big data programming
	10	3,4

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Course Outcomes Emphasized in Laboratory Projects / Assignments

	Outcome	Number of Weeks
1	Create a cloud virtual machine Outcomes: 1,2	2
2	Manage a cloud virtual machine through both user interface and programming interface Outcomes: 2,3	3
3	Create a PaaS program Outcomes: 3,4	3
4	Create a big data program Outcomes: 3,4	3

Oral and Written Communication: No significant coverage

Social and Ethical Implications of Computing Topics: No significant coverage

Theoretical Contents

1.	Cloud computing models and systems architecture
2.	Virtualization
3.	IaaS system architecture
4.	PaaS system architecture
5.	Big data system architecture

Problem Analysis Experiences

1.	Cloud programming (3 assignments)

Solution Design Experiences

1.	Design and implementation of a PaaS program
2.	Design and implementation of a big data program

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The Coverage of Knowledge Units within Computer Science Body of Knowledge[1]

Knowledge Unit	Topic	Lecture Hours
AL11	Big data algorithms	5

[1]See *Computing Curricula 2001 Computer Science*, by the Joint Task Force on Computing Curricula IEEE Computer Society Association for Computing Machinery; cf. Computer Science Body of Knowledge, page 17. Available at: http://www.computer.org/portal/c/document_library/get_file?p_l_id=2814020&folderId=3111026&name=DLFE-57603.pdf