Cloud Computing

CSCI 4450/6400

Instructor Info

Kelvin Gao

Office Hrs: Tue & Thu 3:30p-5:30p

GH 310S

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Course Info

Prereq: CSCI-3400 and CSCI-3700

Tues & Thurs

2:10p-3:25p

Room 205 GH

Lab Info

In class

2:10p-3:25p (after lecture)

Room 205 GH

TA Info

TBD

Office Hrs: TBD

TBD

Overview

Big data is a hot topic and has found various applications in different areas such as scientific research, financial analysis, and market studies. The development of cloud computing technology provides an adequate platform for big data applications. Cloud service providers (e.g., Amazon AWS, Microsoft Azure, Google Clould, etc.) offer a variety of cloud services for individual, education, research, enterprise, etc. Topics in this class includes Infrastructure as a Service (IaaS), Software as a Service (SaaS), data intensive computing (Hadoop, Spark and MapReduce) and so on.

Material

Required Texts

Kai Hwang, Jack Dongarra, Geoffrey Fox *Distributed and Cloud Computing From Parallel Processing to the Internet of Things*. ISBN: 978-0-12-385880-1.

Grading Scheme

5%	Attendance/Participation
15%	Quiz
40%	Programming Assignment
40%	Group Project

Grades will follow the standard scale: A = 89.5-100; B = 79.5-89.4; C = 69.5-79.4; D = 60-69.4; F <60. Curving is at the discretion of the professor.

Late Submission Policy

Except in the cases outlined above for excused absences, programming assignments must be submitted before the specified deadline in order to receive full credit.

- 0 to 24 hours late: 10% of points will be deducted from the original score.
- 24 to 48 hours late: 20% of points will be deducted from the original score.
- Others: No acceptance.

Note: No late submissions will be accepted after the final exam.

E-mail Policy

Subject line format:

For undergraduate: [CSCI 4450][FirstName LastName]You subject

For undergraduate: [CSCI 6400][FirstName LastName]You subject

The professor's e-mail uses filter rules, make sure that you use the correct format; otherwise, your e-mail will be forwarded to somewhere else.

Learning Objectives

- Understand the fundamental concept of cloud computing
- Learn the critical features and services of cloud computing
- Understand IaaS, SaaS, Hadoop, Spark, MapReduce and how to use tools for big data analysis
- Learn the new features of cloud computing

FAQs

What skills are required for this class?

Java and python are high recommended.

Any programming work in this course?

Yes, we do have several class project that require programming works.

What is the difference between CSCI 4450 and CSCI 6400?

CSCI 6400 is for graduate students. It may require more research-related works, e.g., paper review, research-based homework.

Which cloud service provider are we going to use?

Mainly Amazon Web Services.

Make-up Policy

Make-up exams or assignments will only be allowed for students who have a substantiated excuse approved by the instructor *before the due date*. Leaving a phone message or sending an e-mail without confirmation is not acceptable.

Diversity and Inclusivity Statement

I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability - and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

Accommodations for Students with Disabilities

Students who need accommodations are asked to arrange a meeting during office hours to discuss your accommodations. If you have a conflict with my office hours, an alternate time can be arranged. To set up this meeting, please contact me by e-mail. If you have not registered for accommodation services through the Center for Disability Services (CDS), but need accommodations, make an appointment with CDS, 147 Taylor Center, or call 334-244-3631 or e-mail CDS at cds@aum.edu.

Free Academic Support

All students have the opportunity to receive free academic support at AUM. Visit the Learning Center (LC) in the WASC on second floor Library or the Instructional Support Lab (ISL) in 203 Goodwyn Hall. The LC.ISL offers writing consulting as well as tutoring in almost every class through graduate school. The LC may be reached at 244-3470 (call or walk-in for a session), and the ISL may be reached at 244-3265. ISL tutoring is first-come-first served. Current operating hours can be found at www.aum.edu/learningcenter

Blackboard support: Students may seek technology assistance from the ITS Help Desk located in the computer lab on the first floor of the Taylor Center. You may also call 334-244-3500 or email helpdesk@aum.edu.

Academic Integrity

The University Code of Academic Integrity is central to the ideals of this course. Students are expected to be independently familiar with the Code and to recognize that their work in the course is to be their own original work that truthfully represents the time and effort applied. Violations of the Code are most serious and will be handled in a manner that fully represents the extent of the Code and that befits the seriousness of its violation.

Class Schedule

MODULE 1: Introduction

Week 1	Introduction	Jan 14&16: introduction.pptx, syllabus, ch1-java-python.pptx, Task 1

MODULE 2: Vritual Machine and Virtualization

Week 2	Intro. to virtualization	Jan 23: ch2-intro-virtual.pptx, Task 2
Week 3	Device Virtualization	Jan 28&30: ch3-device.pptx Due: Task 1 and 2
Week 4	Cloud Platform Architecture over Virtualized Data Centers	Feb 4&6: ch4-platform.pptx, Task 3

MODULE 3: Cloud Programming and Data Intensive Computing

Week 5	Data features and Database (HBase, S3)	Feb 11&13: ch5-data.pptx
Week 6	Hadoop MapReduce 1	Feb 18&20: ch5-mapreduce-1.pptx, Task 4
Week 7	Hadoop MapReduce 2	Feb 25&27: ch5-mapreduce-2.pptx Due: Task 3 and 4
Week 8	Class Project Description and Spark 1	Mar 3&5: Class Project, ch6-spark-1.pptx
Week 9	Spark 2	Mar 10&12: ch6-spark-2.pptx, Task 5
Week 10	Holiday	Mar 17&19: Sprint Break

MODULE 4: Private Cloud

Week 11	Amazon Virtual Private Cloud	Mar 24&26: ch7-vpc.pptx Due: Task 5
Week 12	Open Stack and Hands-on	Mar 31& Apr 2: ch8-openstack, Task 6

MODULE 5: Other Amazon Web Services

Week 13	DynamoDB	Apr 9&11: ch9-dynamodb.pptx
Week 14	Amazon Lightsail	Apr 16&18: ch10-lightsail.pptx, Task 6
Week 15	Class Project Demo	Apr 23&25: Class Project Demo
Week 16	Exam Week	Due: Task 6, Project report