

# Fall 2019 – CSCI 8795

## Advanced Topics in Cloud Computing

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### 1 General Information

- Instructor: In Kee Kim (inkee.kim@uga.edu)
- Office Location: 802@Boyd GSRC
- Office Hours: 4:00 p.m. to 5 p.m. on Thursday (802@BOYD)
- Credits: 4
- Course website: <http://cobweb.cs.uga.edu/~kim/classes/F19-CSCI8795/>
- Class meeting time and location:
  - Tue and Thurs: 2:00 – 3:15 p.m. @Boyd GSRC 0208
  - Wed: 2:30 – 3:20 p.m. @Boyd GSRC 0208

### 2 Course Overview

Theme of Fall 2019: “**Performance management of microservices and cloud functions.**”

Cloud Computing has become a *de facto* infrastructure in many business and research organizations to deliver various user-facing, business, and scientific applications to end users. The goal of this course is to introduce the underlying technologies that created the current cloud computing and infrastructure, then discuss the future of clouds by investigating the *cutting-edge* research that will soon be part of cloud ecosystems.

This course is designed for “**graduate students**” and is (most importantly) focused on “**research project and seminar**”. We will quickly cover fundamental concepts of cloud computing with lectures, then move onto (more) research-oriented components (seminar and project) of this course.

In addition, the students will have opportunities to present assigned research papers. The students' presentation should clearly address and summarize motivation, problem statement, the authors' approach, evaluation, and discussion topics (e.g., pros and cons, further improvement, etc.).

**Prerequisite:** Not required, but prior knowledge of operating systems, distributed systems, and computer networks will be a plus.

**Textbooks:** This class does not require a textbook. Course materials will be recent publications from top-tier cloud/system conferences and journals.

### 3 Class Presentation

The presentation should be prepared for 30–40 minutes talk and clearly explain motivation, problem statement, related work (additional literature survey is a plus), the authors' approach, evaluation, and discussion topics (e.g., pros and cons, further improvement, etc.).

**Slide for the presentation must be emailed to the instructor by 9 p.m. before the class day (if not, the student will lose 33% of the grade)**. Also, students can always consult with the instructor for the presentation preparation.

### 4 Assignments and Final Research Project

**Reading Assignments (Paper Review):** All students should read each assigned paper and submit the review before the scheduled lecture (9 a.m. of the day). Please note that the reading assignment will be started from the fifth week of the semester. The paper review should have three paragraphs:

- **Paragraph 1:** 1–2 sentences of problem statement and 1–2 summary of the paper
  1. e.g., **Problem Statement:** what problem is being addressed in the paper?
  2. e.g., **Summary of Approach/Evaluation:** “the authors address the problem by designing and implementing...”
- **Paragraph 2:** pros and cons of the paper
  1. e.g., **Pros:** what's compelling/effective about the paper.
  2. e.g., **Cons:** what are the most significant flaws/limitations of the paper?
- **Paragraph 3:** (at least) three questions for the paper discussion

**Programming Assignment:** This course will have two programming assignments and the details will be announced soon.

**Final Research Project:** An essential component of this course is a final research project. You are expected to work on a cutting-edge research problem, which is relevant to the topic (as well as the theme of the semester) of this course. You can work either individually or with other students (1 to 3 members). **Project idea has to be discussed with the instructor.** Tentative schedule for this project is as follows:

- Aug/30: Team building deadline
- Sep/15: Project idea deadline
- Sep/22: Proposal doc (ppt) deadline
- Week06: Project discussion for proposal
- Week07: Proposal presentation
- Oct/21: Mid-Phase report deadline
- Week11: Mid-Phase progress discussion
- Week15: Final project presentation
- Dec/01: Final report due

## 5 Grading Distribution

- Class participation/Quiz: 10%
- Programming assignment 10%
- Reading assignment: 10%
- Paper presentation: 20%
- Research project: 50%
  - Project idea: 5%
  - Proposal doc (ppt): 5%
  - Proposal presentation: 5%
  - Mid-Phase report: 5%
  - Final presentation: 10%
  - Final report: 20%

## **6 Academic Honesty**

All students must follow the Academic Honesty Policy of the University of Georgia. The detailed information of this policy can be found at <https://honesty.uga.edu/Academic-Honesty-Policy/>. If there are any issues regarding this policy, please contact the instructor immediately.