

# CS 6111-001: Cloud Computing

**Instructor:** Prof. Haiying Shen, Associate Professor, Rice Hall, Room 303, [hs6ms@virginia.edu](mailto:hs6ms@virginia.edu)

**Office Hours:** 3:15pm-4:15pm, Monday and Wednesday, other times by appointment

**Course Website:** Course Canvas (<https://canvas.virginia.edu/>)

**TA:** Alireza Namazi ([mez4em@virginia.edu](mailto:mez4em@virginia.edu))

**Office Hours:** 3:15pm-4:15pm, Tuesday and Thursday, other times by appointment

## Communication:

Please ask questions and communicate with us through Canvas/Piazza (instead of emails). Please note that emails will not receive responses. This approach ensures that all messages are promptly addressed and that no messages are inadvertently overlooked.

## Zoom link for Class:

<https://virginia.zoom.us/j/93814743626?pwd=SXEzTkVyN3lSYkVibnhjS0pSQVlxdz09>

Passcode: **987712**

## Zoom link for Office hour:

<https://virginia.zoom.us/j/93714038208?pwd=WXdyYWdXb2RBbEhcnZnM2Q5M01rQT09>

Passcode: **312954**

## Description

With the tremendous advances in Cloud Computing, we are witnessing a revolution that involves changing our world through Cloud Computing technologies and Machine Learning. This course will focus on studying the state of the art of Cloud Computing and Cloud Systems for Machine Learning. Students will be assigned papers to read in order to learn about these areas. The primary goal of this class is discussing and understanding the latest research topics in the Cloud Computing areas. Students are required to actively participate in the class.

## Course Materials

No textbook is required. Recent papers on top conferences, including NSDI, OSDI, SIGCOMM, and USENIX Annual Technical Conferences (ATC).

## Prerequisites

Although not an official prerequisite, you will find the project easier to handle if you have some familiarity with some programming languages, such as **Java**, **C/C++**, **Python** and **UNIX program development tools** (text editors, make, etc.). It is expected you to pick up requisite knowledge of the above tools in the first few weeks of class **on your own**.

## Workload

- **Class:** You are expected to attend all of the lectures, and actively participate in the class.
- **Readings:** You are responsible for completing suggested readings before the class discussion. Written reports on papers are required before the papers are presented in the class.
- **Project:** One semester-long programming-based project, which can be done individually or collaboratively with another student, is mandatory.

Note that we budgeted 1.5 classes for one paper. A paper may need 1 class or 2 classes. If we have more time, then we will add student paper presentation part to the class.

## Grading

In-class quizzes (may include student paper presentation): 20

Reports for all papers introduced in the class: 20

Midterm exam: 20

Final exam: 20

Project (including proposal, midterm, and final reports): 20  
Extra credit will be granted for particular clever or creative solutions in the project.

### **Project grading:**

Project phase 1 (10 credits):

Presentation: 4 credits, report 3: credits, 1 slide upload to canvas/assignment: 1.5 credits, 1 slide upload to Google Slide: 1.5 credits

Project phase 2 (15 credits):

Presentation: 5 credits, report 7: credits, 1 slide upload to canvas/assignment: 1.5 credits, 1 slide upload to Google Slide: 1.5 credits

Project phase 3 (25 credits):

Presentation: 10 credits, report 12: credits, 1 slide upload to canvas/assignment: 1.5 credits, 1 slide upload to Google Slide: 1.5 credits

Google Slide link is in the schedule file. We refer to the Google Slide log to see whether a slide file was uploaded there by the deadline.

Extra credit will be granted for particular clever or creative solutions in the project, paper discussion and good questions (scale to 5)

Final letter grades are not assigned according to an absolute scale. Based on final numeric scores, the instructor will draw cutoffs between letter grades as deemed appropriate.

### **Paper reading reports**

Students are required to submit reports for the presented papers to 'Canvas/Assignments' **by 11:59pm one day before the presentation day of the selected paper.**

### **Exercises, active participation, and attendance**

If time allows, discussion sessions will be arranged throughout the semester. For this discussion session, the students in the class will be divided into three groups: author panel, program committee panel, and jury panel.

The authors try to defend the paper. You need to clarify motivation and contribution, and possible limitations (may or may not be mentioned in the paper). To support the claims, one can try to use experimental results presented in the paper.

The job of program committee is to ask the authors questions, evaluate the paper and make a decision about whether to accept, reject or shepherd the paper. You can try to find flaws/drawbacks. A paper may have drawbacks even though it is accepted by a conference. Since there are lot of submission in a conference, program committee picks the best submitted paper for final publication. Check motivations or problems, novelty, contribution. Does the experimental evaluation support authors' claim about novelty/contribution? Is experimental evaluation scalable (large enough to hold author's claim)? So on...

Jury evaluates the advantages and limitations from author panel and program committee panel. Actually, this role is tougher than others. You need to clearly understand the paper and understand what author/program committee claims. How does each group defend their own claims?

### **Project**

In a collaborative project, a group can consist of at most 2 members. Students are required to form their groups by designated schedule. Students are required to present their project proposal, mid-term update and final project demonstration, and upload their report and slides **for each phase/presentation and the source code for the final project to Canvas/Assignments by 11:59pm on the last day of the presentation in the class.**

For the mid-term update presentation, please do not present what you presented in the project proposal presentation and only present what you have completed after the proposal presentation. This will affect the grade of the project.

## **Policies**

### **Attendance**

You are expected to attend every lecture in its entirety. Do not schedule other classes or commitments that conflict with any part of the lecture time. A low attendance will negatively affect the grading scale when the total grade is at a borderline.

### **Assignment Policies**

- Unless otherwise specified, all deliverables should be submitted through Canvas and are due at 11:59 pm on the due date. Reports should be placed in each student's appropriate canvas directory.
- You are strongly encouraged to turn in deliverables before the deadline to account for any unpredictable situations. Please always work ahead and make backups to account for unexpected problems.
- Any questions regarding your scores of reports should be resolved within 3 days after the scores are released.
- No late submission will be accepted. No make-up in-class quizzes will be allowed. We will drop the three lowest in-class quiz scores, and drop the three lowest report scores. To account for various reasons for missing deadlines and in-class quizzes, we implement a practice of dropping the lowest scores. Therefore, we consistently apply this policy and will not reply to requests for deadline extensions or make-up in-class quizzes, regardless of the reasons. Additionally, there's no need to inform us in advance about your absence from class.
- We make every effort to promptly address students' questions and requests. If you do not receive a response from us within 48 working hours, it is likely due to your questions or requests having been previously addressed in our class policy and then please kindly consult our syllabus for the answers.

### **Honor Pledge Policy:**

- The instructor will indicate which assignments and activities are to be done individually and which permit collaboration. You may DISCUSS a homework assignment with anyone in the class, including what a question means, how you might go about solving it, or even how you did solve it. You can discuss any material from the book or lecture that you consider relevant to the homework with anyone.
- You MAY NOT do any of the following:
  - LOOK at homework solutions written by anyone in the class.
  - COPY someone else's code or project report or data, other than your partner's.
- There are no restrictions on what you can discuss with the instructor.
- You do not have to write the pledge on your assignments, although we will not mind if you do. Whether or not you do write it, we consider the pledge to be implicit when you hand in your homework.
- I trust every student in this course to fully comply with all of the provisions of the UVA honor system.

All work should be pledged in the spirit of the Honor System at the University of Virginia. For more information, visit [www.virginia.edu/honor](http://www.virginia.edu/honor).

### **Special Needs:**

It is the policy of the University of Virginia to accommodate students with disabilities in accordance with federal and state laws. Any student with a disability who needs accommodation (e.g., in arrangements for seating, extended time for examinations, or note-taking, etc.), should contact the Student Disability Access Center (SDAC) and provide them with appropriate medical or psychological documentation of his/her condition. Once accommodations are approved, it is the student's responsibility to follow up with the instructor about logistics and implementation of accommodations. Further policies and statements are available at [www.virginia.edu/studenthealth/sdac/sdac.html](http://www.virginia.edu/studenthealth/sdac/sdac.html).

### **Generative AI Statement:**

Students are not permitted to use generative AI tools for writing the assignments.